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Mr. Robert J. Pellatt
Commission Secretary
British Columbia Utilities Commission
Sixth Floor, 900 Howe Street, Box 250
Vancouver, BC, V6Z 2N3

Without Prejudice

June 18, 2007

Dear Mr. Pellatt,

**Re: FortisBC Inc. - Certificate of Public Convenience and Necessity (CPCN) for the
Naramata Substation & Transmission Line Project No. 3698458**
<http://www.bcuc.com/ApplicationView.aspx?ApplicationId=150>

1. Please accept my **Evidence # 33** for reference into subject hearing process:

Statement by Don Maisch on Power frequency magnetic fields and health

Out of one of the links given in the attached statement paper I like to cite here:

The fact is that most official EMF standards actually serve to protect the power industry against litigation and are usually quoted as “safe levels” by those wishing to give a false sense of security.

2. It has come to my attention that the WHO is expected to officially releasing its first international EMF guideline today, which might and should have an impact in the Naramata CPCN and other hearings.

Respectfully submitted,

Hans Karow, CORE

Statement by Don Maisch on Power frequency magnetic fields and health

To whom it may concern

I have been asked to make comment on the possible health impacts from human exposure to 50 – 60 Hertz (power frequency) electromagnetic fields (EMFs). Exposure to EMFs at levels implicated with ill health effects can arise from living in close proximity to transmission lines (roughly under 60 meters) or unbalanced street powerlines, electric currents running on metal water piping in homes and offices, office work stations adjacent to major electrical equipment as well as sources within the home, such as having a bed head close to a meter box on a bedroom wall (a common practice in Australia)

Ref: < http://www.emfacts.com/papers/home_infosheet.pdf >

Most of the concerns about possible health hazards focuses on the cancer issue, with childhood leukemia a particular worry. However there is a wealth of information that a major point of interaction is on the immune system, with prolonged EMF exposure acting as an immune system stressor. The outcome of which could be cancer or any number of immune related diseases. What that outcome will be is highly dependent upon individual genetic susceptibility.

Ref: < <http://www.emfacts.com/papers/cfs.html> >
< http://www.emfacts.com/papers/cfs_changes.pdf >
< <http://www.emfacts.com/papers/cf-changes2.html> >
< <http://www.emfacts.com/papers/ross-house.html> >
< <http://www.emfacts.com/papers/french.html> >

My main interest is in EMF standard setting, a topic that involves several fundamental issues that go to the heart of the continuing EMF /health effects controversy internationally. These issues are of major importance and are explored below.

I became actively involved in the EMF standard setting process in 1992 as a standards researcher for the late Senator Robert Bell in Tasmania. I am currently a member of the Standards Australia TE/7 Committee: Human exposure to electromagnetic fields, as well as the Australian Radiation Protection & Nuclear Safety Agency's (ARPANSA) powerline consultative committee.

I have written numerous papers on the topic, and have been directly involved with designing and conducting a residential EMF exposure study in conjunction with the Dept. of Psychology at Massey University, Palmerston North, N.Z. and the Australasian College of Nutritional & Environmental Medicine in Melbourne.

I currently am writing a PhD thesis on risk assessment as it is applied to radiofrequency standard setting (University of Wollongong, NSW).

Issues:

- Internationally, the literature supplied the power industry and most national radiation advisory agencies, tend to have a strong bias towards a viewpoint that considers that the only health issues of any consequence from EMF exposure are those associated with shock and burn hazards at high levels of exposure. The existence of a wealth of epidemiological and other data that found adverse health effects well below their recommended exposure guidelines is simply dismissed out of hand by statements that, in my opinion, are extremely misleading.
- By arbitrarily dismissing all evidence to the contrary, many national radiation advisory agencies, as well as industry, follow the viewpoint that the exposure limits promoted by the

International Commission on Non-Ionizing Radiation Protection (ICNIRP) adequately protect public health. This assertion is not true. Back in 1991 the Australian Radiation Laboratory (ARL) clearly stated that these limits (100uT residential and 500 uT occupational for 24 hour exposure) *“represent plausible field values, below which immediate health effects are unlikely. They are not intended to provide protection against possible cancer induction by continued exposure at lower field levels.”* Now, 14 years later, those same limits are still being promoted as somehow protecting public health. This is simply not true. This level of reasoning makes about as much sense as proposing an asbestos exposure level that only protects from immediate health effects by ignoring the existence of the now well established latency factor in cancer.

- We now have a wealth of reliable epidemiological evidence, well beyond reasonable doubt, that finds that prolonged powerline magnetic field exposure at a level of 0.4 uT doubles the risk of childhood leukaemia. At an international childhood leukaemia conference in London in Sept. 2004, Anders Ahlbon, one of the world’s leading epidemiologists stated that *“there is probably a risk below 4 uT because it is unlikely that there is a threshold for the EMF effect”*. Anders also stated that *“while the risk below 4 uT was quite small for any single individual, the societal risk would be significant due to the large number of children exposed to low-level fields.”* At the same conference, a Japanese research team reported that children exposed to 0.4 uT had close to a five times increased risk of leukaemia. This is just a small sampling of the large amount of evidence, including other EMF health effects, that should trigger public health protections.
- The main problem, as I see it, is that national agencies charged with public health protection, have abrogated their responsibility over to so called “international” expert bodies, such as ICNIRP. Having strong ties with industrial interests, these organisations have assigned themselves the task of assessing the EMF environmental risks according to methods largely developed in the 1970’s by the corporate industrial sector to ward off regulation of their activities and make successful litigation against them unlikely. The consequences of this approach to EMF health hazards has been to delay, complicate and befuddle the issues so effectively that the industry remains free of enforced limits.

Where do we go from here?

One way to reduce actual and perceived risks to society, and to start the process of building a better foundation for trust and communication between interested parties, is to include the public as valid stakeholders in all stages of planning and routing of transmission lines and the locations of electrical substations.– And this should include adequate public representation on the relevant standard setting committees.

In Australia, ARPANSA is aware of the advisability of involving the public in the decision making process. At an International OECD Nuclear Energy Agency workshop at Villigen, Switzerland in 2001, leaders of the radiation protection and regulation community discussed the involvement of the public in regulatory decision making. It was acknowledged by an ARPANSA representative that *“interaction with the public, not information, was needed, and that the public should be a part of the decision making process – and it must be genuine.”*

Far too many EMF standard setting bodies that rely on the ICNIRP guidelines have tried to perpetrate ICNIRP’s questionable risk assessment by maintaining an aura of expert infallibility devoid of any public critique of it’s decision making process. This process largely represents the viewpoint of those responsible for the exposures while ignoring the interests of those who are exposed.

The Australian experience of public participation, both in membership on expert committees and in public submissions to those committees, has demonstrated that the mystique of expert infallibility cannot be maintained when a concerned and well informed public becomes involved in the process. When all is said and done, it is only by this process that the foundations for an accurate and trustworthy risk assessment for all members of society can be laid.

Don Maisch

May 18, 2005

Web site: < <http://www.emfacts.com> >

Also see Microwave News: < http://www.microwavenews.com/mwn.dec_04.pdf >

Published papers:

Maisch D, *Report on the International Conference: 'Mobile Communications and Health: Medical, Biological and Social Problems', Sept 20-22, 2004, Moscow, Russia, European Biology and Bioelectromagnetics, Vol. 1, Issue 1, March 2005.*

Maisch D, *Children and mobile phone use: Is there a health risk? The case for extra precautions* ACNEM Journal, Vol.22, No.2, August 2003.

Maisch D, Podd J, Rapley B, *Changes in Health Status in a Group of CFS and CF Patients Following Removal of Excessive 50 Hz Magnetic Field Exposure.* ACNEM Journal, Vol.21, No.1, April 2002.

Maisch D, *Mobile Phone Use: It's time to take precautions.* ACNEM Journal, Vol.19, No.2, April 2000.

Maisch D, Podd J, Rapley B, Roland A, *Chronic Fatigue Syndrome (CFS) - Is prolonged exposure to environmental level powerline frequency electromagnetic fields a co-factor to consider in treatment?* ACNEM Journal, Vol. 17 No. 2, Dec. 1998.

Maisch D, Rapley B, *Powerline Frequency Electromagnetic Fields and Human Health - Is it the time to end further research? An Overview of Three Recent Studies.* ACNEM Journal Vol. 17 No.1, June 1998.

Maisch D, *Melatonin, Tamoxifen, 50-60 Hertz Electromagnetic Fields and Breast Cancer: A Discussion Paper,* Australian Senate Hansard, Oct 27, 1997

Posters:

Podd J, Maisch D, *Reducing the Level of 50 Hz Magnetic Fields Lessens Symptoms of Chronic Fatigue and Improves Sleep.*(Poster presentation), 2nd International Workshop On Biological Effects of Electromagnetic Fields 7-11 October 2002, Rhodes, Greece.

Conference papers:

"A corporate risk assessment of RF bioeffects studies and the use of mobile phones by children: Is it really science?" Children with Leukaemia Scientific Conference: incidence, causal mechanisms and prevention, Westminster, London, 6-10 Sept. 2004
http://www.emfacts.com/papers/corporate_risk.pdf

Presentations:

"Health Problems Associated with Power Frequency EMFs: The case for an environmental hazard", Community Nurses Association, Bellerive Community Health Centre, Bellerive, Tasmania, March 1, 2005

"The case for a precautionary approach for children's use of mobile phones", Mast Sanity AGM, Bristol Cricket Club, Bristol, U.K., 25 Sept. 2004

"Powerline Research in Australia: EMF effects on the immune system", Wimbledon Pacific Forum, Wimbledon, U.K., 14 Sept. 2004

"Children and Mobile Phone Use: Is there a health hazard?", Mast Sanity public meeting, Curzon Cinema, Soho, London, U.K., 13 Sept. 2004

"Where are the electrosensitives? A study on electrosensitivity in Australia" A Symposium on Electrical Sensitivity in Human Beings, Royal Society of Medicine, London, 11 Sept, 2004

"Bypassing Peer Review: Motorola's influence on mobile phone research in Australia (or Beware of Mickey Mouse Reviews)" ACNEM Primary Course, Sydney, Manly Quarantine Station, December 3, 2003

"Bypassing Peer Review: Motorola's influence on mobile phone research in Australia,(Or Beware of Mickey Mouse Reviews)", STS Conference, Wollongong University, Wollongong NSW, November 26, 2003

"New research into chronic fatigue syndrome (CFS) and EMF exposures at home and work", Tasmanian Environment Centre, Hobart, June 26, 2002

"The latest research on EMF and chemical exposures as a health hazard", Comcare Health Expo. Dept. Employment & Workplace Relations, Hobart, April 16, 2002

"Environmental Hazards To Health in Today's IT Office", OH&S Training Course, TTLC, Hobart, April 12, 2002

"Introductory course on the use of the EMFacts Survey Program", Community Workshop, The Chinese Museum, Melbourne, March 24, 2002

"The latest research on EMFs and health". ACNEM training course, Melbourne, Vic., March 22, 2002

"Environmental Hazards To Health in Today's IT Office", OH&S Training Course, TTLC, Hobart, Oct. 30, 2001

"Preliminary Findings from a CFS /EMF study", ACNEM training course, Melbourne, Vic., August 4, 2001

"EMF and Chemical Exposures as Workplace Stressors: The latest research", CPSU OH&S meeting, Hobart, Tasmania, July 12, 2001

"EMF and Chemical Exposures in the IT office/ mobile phones", TasIT workshop, Hobart, Tasmania, June 12, 2001

"EMF and Chemical Exposures in the IT office", AWU Call Centre Committee, Melbourne, June 4, 2001

"Introductory course on the use of the EMFacts Survey Program", Community workshop, The Chinese Museum, Melbourne, May 27, 2001

"EMF and Chemical Exposures in the IT office", CEPU, Melbourne, May 24, 2001

"An EMF policy for Australia", Public meeting at the Playford Bldg., University of SA, organised by the SA Greens, May 16, 2001

"OH&S hazards in the IT Workplace", UTLC Combined Unions meeting, Adelaide, SA, May 8, 2001

"Electromagnetic fields as an OH&S Issue", ITSSA / Workcover conference "OHS&W: Working Together", Adelaide, South Australia, May 7, 2001

"EMF and Chemical Exposures as Workplace Stressors", The Tasmanian Trades & Labour Council, (TTLC), Hobart, Tasmania, November 1, 2000

"Stress in the IT workplace: Call Centres and the Swedish solution", Victorian Trades Hall Council, Melbourne, Vic., October 9, 2000

"EMR Health Hazards in the Home & Office", Conference at the Savoy Hotel, Melbourne Vic., October 8, 2000
"Powerline Health effects, Exposure Standards and Case Histories", Coomera Valley Progress Association, Coomera. Qld., August 22, 2000

"Is EMF/EMR Exposure a Public Health Hazard? An overview of the issues", Qld.Greens State Conference, Springbrook, Qld., August 19, 2000

"EMF Exposure as an Immune System Stressor and CFS: Case Histories", Community meeting, The Theosophical Society, 355 Wickham Terrace, Brisbane, Qld., August 18, 2000

"Mobile Phones and Their Base Stations: How Safe are They?", G.E.C.K.O. House, 139 Durling St. Currumbin, Qld., August 17, 2000

"Call Centres and Stress; The Swedish Solution" and *"Mobile Phone use is an OH&S Issue"*, The Community and Public Sector Union (CPSU), Tasmanian Branch, Hobart. August 12, 2000

"Call Centres and Stress; The Swedish Solution" and *"Mobile Phone use is an OH&S Issue"*, OH&S officer's training course, TTLC, August 4, 2000

"Mobile Phone Towers, EM Fields and Public Health Risks", Presented at three public meetings in Brisbane, Mapleton and Maleny Qld., May 24-27,2000

"Is EMF/EMR Exposure a Public Health Hazard? An overview of the issues", Nexus Conference, Sydney, May 20, 2000

"Mobile Phone use is an OH&S Issue", OH&S officer's training course, TTLC, April 7, 2000

"Stress / Fatigue in the Workplace and EMF Exposure: Is there a connection?", ACTU national OH&S Committee meeting, Melbourne. February 18, 2000

"CFS and EMF Exposure: Is there a health hazard?" Two talks given at the Melbourne training course for the Australasian College of Nutritional & Environmental Medicine (ACNEM), February 17-18, 2000

"EMF Exposure as a Risk Factor for the condition of Chronic Fatigue Syndrome." ACNEM training course, Melbourne, February 26, 1999

"EMF Exposure and Human Health: Is it time to end further research?" ACNEM Training course, Melbourne, February 18, 1998

Submissions:

Maisch D, *A Discussion Paper concerning the validity of the science, promotion and sales of EMR "Protective*

Devices, Inquiry into electromagnetic emissions & exposure standards, June 15, 2000

Maisch D, *An examination of the efforts to set an Australian Standard dealing with electromagnetic emissions, and an examination of the merits of the transfer of the responsibility for setting a new Australian standard for electromagnetic emissions to the Australian Radiation Protection and Nuclear Safety Agency, Senate Inquiry into electromagnetic emissions & exposure standards, May 10, 2000*

Maisch D, *The case for a strong Precautionary Approach, and statement of intent, which takes into account possible non thermal effects, to be included in the Australian Standard. A Discussion paper, Standards Australia TE/7 Committee-Human Exposure to Electromagnetic Fields, March 1999*

Maisch D, *Comments on the South Australian Health Commission's (SAHC) Information Sheet: Radiofrequency Fields: Is There a Health Hazard? , South Australian Health Commission, August 1996*

Maisch D, *Mobile Phones and Their Transmitter Base Stations: The Evidence For Health Hazards - A local Government and Community Resource Document, Senate Hansard, April 1996*

Maisch D, *Right-of- Reply: To the Electricity Supply Association of Australia's supplementary submission (7 Nov.1995) to the Senate Economics References Committee. East-Link enquiry, House of Representatives, April 1996*

Maisch D, *(Non-ionizing) Electromagnetic Fields and Human Health: Are current standards safe?, Senate Hansard, Oct. 1994*

Maisch D, *Report on the International Strategy for the Implementation Food Irradiation, House of Representatives Inquiry, May 1988*

Maisch D, *Tasmanian Conservation Trust's submission to the Inquiry into the Use of Ionizing Radiation for Food Preservation, House of Representatives Inquiry, Nov.1987*

Reference reports:

Maisch D, *The ICNIRP Guidelines: RF risk assessment built on a house of cards, Sept. 2004.*

Pseudo-iron deficiency in a French population living near high-voltage transmission lines: A dilemma for clinicians, Emfacts Consultancy, compiled March 14, 2001

Magnetic Fields Due to Grounding to Water Pipes, Emfacts Consultancy, compiled July 1999.

The Ross House Substation: Chronic Fatigue Syndrome (CFS) symptoms attributed to exposure to electromagnetic fields (EMF) due to proximity to an electrical substation, Workcare compensation case, Melbourne Victoria, 1991-1992. Emfacts Consultancy, Compiled Jan - Feb. 1999.

EMFs from Electrical Wiring and Appliances: A guide for homeowners. Emfacts Consultancy, < http://www.emfacts.com/papers/home_infosheet.pdf >, April 1999

Electromagnetics Forum; A News Report on the Health Effects of Electromagnetic Radiation. (4 quarterly issues published), Emfacts Consultancy < <http://www.emfacts.com/forum/index.php> >, 1996-1997

Fields of Conflict: The EMF health hazard controversy, Maisch D., Aug. 1995

The Food Irradiation Digest, Maisch D., Dec 1988

Research Projects:

"An Investigative Pilot Study: Is Excessive Electromagnetic Field (EMF) exposure a risk factor for the conditions of Chronic Fatigue Syndrome (CFS) and chronic fatigue?" (49 subjects) Melbourne, Adelaide & Hobart, Published JACNEM (above), May 2001-March 2002

The EMFacts Home & Workplace EMF Survey Program: A "Community Based" electromagnetic field (EMF) survey program, June 1999 - ongoing

Nine case histories: Background to paper - Chronic Fatigue Syndrome (CFS) - Is prolonged exposure to environmental level powerline frequency magnetic fields a co-factor to consider in treatment?
< <http://www.emfacts.com/papers/case-histories.html> >, 1997 - 1998

"Powerline Frequency Electromagnetic Fields (EMF), the Melatonin Hypothesis and Breast Cancer: A Residential EMF Exposure Investigation", (27 subjects), Grace Gawler Womens Centre, Yarra Junction, Vic., (Unpublished), February 1998