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December 23, 2005

Dear Mr. Pellatt,

Re: **FortisBC Inc. Order No. G-114-05 / Project No. 3698407CPCN Application for Nk'Mip Substation & Osoyoos Transmission Line**
<http://www.bcuc.com/ApplicationView.aspx?ApplicationId=93>

Please accept this as my **Evidence # 20**, containing several of Dr. Louis Slesin's commentary in Micro Wave News journal. [*Microwave News is "the most authoritative journal on ELF fields and health." – Fortune*]

This evidence for future referrals and consideration by all parties involved; as well, this evidence also in response to Fortis position, obviously sharing the positions of national and international bodies as indicated on FortisBC Response to BCUC information request, response dated December 16, page 21.

May I only cite here from one of Dr. Slesin's comment:

"Precautionary policies to protect children from power line electromagnetic fields (EMFs) should have been adopted years ago. It's a no-brainer, yet health officials continue to sit on their hands.

There has long been widespread agreement that EMFs are linked to childhood leukemia. They are also likely to play a role in both brain and breast cancer as well as in miscarriages and in neurological diseases such as Alzheimer's and ALS, also known as Lou Gehrig's disease.

But health agencies have been unwilling to move against these largely preventable risks. It's astonishing that those charged with promoting public health —not just electric utility executives— are the roadblocks to change..."

[December 2004 , The Case for EMF Precautionary Policies , WHO and Public Health Officials Stand in the Way; Eight Wrongheaded Excuses Debunked in London, <http://www.microwavenews.com/viewsonnews.html>]

EMF exposure recommendations or guidelines serve the better interests of industry than the people's health and well being, as attached articles from MicroWaveNews demonstrate.

In the best interest of the directly and indirectly affected people by the proposed Fortis transmission line and the optional routes, it is imperative that these people get informed how recommendations and guidelines have been established.

Alternative solutions and mitigation measures are possible, by applying precautionary principle in a way that people can enjoy active and passive prudent avoidance.

The people have the right to know what they are exposed to, and about possible consequences of associated with near by power lines. People must be able to make an **informed decision!**

Respectfully submitted,

Hans Karow

<http://www.microwavenews.com/fromthefield.html>

[Note: clicking on underlined words will lead to direct links of referrals...H. Karow]

July 5, 2005

Time To Stop the WHO Charade

Now we know what Mike Repacholi has been doing since the infamous Mike-and-Leeka flip-flop of 2003. Back then Repacholi and his assistant Leeka Kheifets decided that there was no need to apply the precautionary principle to EMFs—soon after telling everyone that the time for action had finally arrived.

It appears that for the last two-and-a-half years, when not shuttling from one meeting to another, Mike has been cataloguing ways the WHO can avoid taking precautionary steps to reduce EMF exposures.

Mike's apologia will be presented next week at a three-day workshop in Ottawa, July 11-13. He calls it a [policy framework](#). We call it a sham. Mike has assembled a list of reasons for doing nothing. Electric utilities and telecom companies could have written the WHO plan. They may well have played a leading role.

You can see where Mike's sympathies lie from the [workshop agenda](#): the GSM Association, the U.K. National Grid, the American Chemical Council, Shell Canada, have all been invited to speak, together with an assortment of academics, risk consultants and a few of his WHO buddies.

Mike has not even made a pretense of having a balanced program. Absent are labor, consumer and environmental groups, save one small Canadian organization. John Swanson of the National Grid will be in Ottawa, but Alasdair Phillips, England's leading and most knowledgeable EMF activist, will not be there—no doubt because he would openly challenge Repacholi's pro-industry sympathies.

Power lines or mobile phones are not really even on the workshop agenda. Only Mike is slated to address the EMF issue. Instead, the Ottawa workshop will address many of the major social risks that are in the news: global warming, mad cow disease, and even a flu pandemic which could wipe out many of us long before the ice caps melt. Mike's message is loud and clear: Don't worry about a tiny—and unlikely—EMF health risk when there are more important threats on the horizon.

Back in early 2003, there were enough reasons to invoke the precautionary principle for power-frequency EMFs and for RF from mobile phones. Over the

last year, more studies have reaffirmed the need for caution. Three different data sets now implicate long-term use of mobile phones with acoustic tumors: Two from the [Örebro group](#) and one from the [Karolinska group](#). The University of Vienna has found [support](#) for Henry Lai and NP Singh's studies showing that RF radiation can break DNA—these results from the REFLEX research program indicate that RF radiation may well be genotoxic after all. And even more recently, an Australian researcher reported [additional evidence](#) that RF can break up DNA.

Just last month, a British team published a [paper](#) in the *British Medical Journal* showing that children living near power lines had higher than expected rates of leukemia. The National Grid's Swanson is one of the authors of that paper, but at this point he is not slated to discuss it in Ottawa.

Mike has no use for any of this new information —none of it is cited in his framework—because he has already made up his mind that nothing needs to be done. When the REFLEX DNA work first hit the media, Mays Swicord and his gang at Motorola didn't have to say a word because their man in Geneva, Mike Repacholi of the World Health Organization, was ready to speak for them. Mike offered immediate reassurances that the Vienna results are spurious and may be discounted. "One has to question what went wrong, or was different, for them to get the results they claim," Mike told the *New Scientist*.

Mike wants us to believe that his is the voice of reason, but, in fact, it is his views that are out of step with those of many national governments. China, Italy, Switzerland and Russia have all adopted precautionary exposure limits —directly rejecting Mike's pleas for harmonizing radiation standards. Expert panels in England, France, Germany and Russia have all issued statements discouraging children from using mobile phones.

To his shame, Mike was the only member of Sir William Stewart's panel to object when, in 2000, it was the first to call for children to avoid cell phones. English kids, like others everywhere, love their mobile phones and use them all the time. Neither they nor most of their parents have ever heard of Sir William's cautionary advice. But even though largely ignored by consumers, Sir William, with this single recommendation, underscored our ignorance about radiation health effects and prompted continued health research. He set a tone for others to follow.

Sir William's imperative is to protect public health. That is also supposed to be Mike's mission at the WHO. But his words and action make it clear that his principal interest is in the well-being of his corporate friends.

As the old saying goes, "If it walks like a duck, and quacks like a duck, then it's a sure bet, that it's a duck." Mike's actions and words are those of an industry operative. And for all we know he may be one.

Mike has repeatedly refused to disclose who is paying for his EMF project and all its conferences and workshops. We do know that WHO does not foot the bill. Mike has to raise his own budget and travel funds. We also know that he found a way to skirt the WHO rules that bar direct industry support —the mobile phone manufacturers have said that they provide him with \$150,000 a year with additional money for meeting and travel expenses.

But where does all the other money come from? What's stopping Mike from doing the right thing? Why doesn't he issue a simple and clear message that EMFs and RF radiation present possible health risks and that, until more answers are in hand, we should try to reduce unnecessary exposures. All he needs to do is to offer a single sentence of advice: Be careful until we know more about the health risks. That's it. A simple public health message of caution from the World Health Organization.

It's time for the Mike-and-Leeka charade to come to an end. Show us the money, Mike. Show us who's paying the bills. Maybe then we will know who you are really working for.

<http://www.microwavenews.com/fromthefield.html>

[Note: clicking on underlined words will lead to direct links of referrals...H. Karow]

August 3, 2005

WHO's Repacholi Flip-Flops Again

Remember this: The next time Mike Repacholi tells you something, it probably means nothing at all.

A couple of years ago, he advocated precautionary policies for EMFs from power lines and RF radiation from mobile phones, but soon afterwards he backed off, saying it was all a misunderstanding (see *MWN*, M/A03 and M/J03).

Now he's done it again.

Cell phones are safe and children need take no special precautions—unless they or their parents are concerned —Repacholi advises in a just-released [clarification](#), reaffirming a five-year old [policy statement](#).

Repacholi sang a different tune when he was in Canada last month for his workshop on setting precautionary policies under uncertainty. That same week (July 9-14), the *Toronto Star* ran a major series on the controversy over the safety of cell phones, with special emphasis on the possible risks to children. Under the media spotlight, Repacholi, promoted precautionary policies for children's use of mobile phones.

“With respect to children, WHO recommends that children should use hands-free headsets,” Repacholi told [Canadian TV](#).

“We certainly advocate precautionary measures for children,” Repacholi told the [Toronto Star](#).

“With respect to children, WHO recommends that children should use hands-free headsets” reported [ConsumerAffairs.com](#).

Repacholi would have us believe they all got it wrong.

Tyler Hamilton, one of the two reporters who wrote the *Star* series is standing firm. “Repacholi said it in three different forums plus I saw him say it on television,” Hamilton told *Microwave News*. “He said it to me in a telephone interview, he wrote it to me in an e-mail and I heard him say it at the Ottawa conference.”

Hamilton forwarded an e-mail Repacholi had sent him a few days before the conference. This is part of what Repacholi wrote:

“WHO has already said on a number of occasions that children’s exposure should be reduced. However the best way to achieve this is to ask them to use hands-free-kits.”

In his latest clarification posted on the WHO Web site, Repacholi states that “WHO’s policy on mobile phones, released in 2000, remains intact.” He goes on: “WHO’s International EMF Project does not change its position through media reports, rather policies and recommendations will only be amended in documents through normal WHO information outlets.”

We beg to differ.

Mike Repacholi does change his position for media reports. He believes that he can say whatever he wants when under pressure and that he can retract it all later.

Repacholi and Sound Science

When asked by a Canadian who is electrosensitive for a response to our [July 5 commentary](#), “Time To Stop the WHO Charade,” here’s part of what Repacholi replied:

“As you know WHO has built the highest possible reputation in public health matters among the public and governments world wide and the EMF Project will not be deviating from the **sound science** course that sustains this high esteem, no matter what the pressures from self interest groups or individuals. Louis appeals to people who do not believe in the scientific method for resolving issues. He, like others who are unable to argue a scientific case always claim WHO decisions are industry biased—a completely untrue position.” [our emphasis]

At the risk of pointing out the obvious, our criticism of WHO’s EMF project has nothing to do with science per se, but how Mike Repacholi sets policies based on the science—both what the science tells us and, just as importantly, what it doesn’t tell us.

As we noted in the commentary, many national governments have looked at the same body of scientific data and have promoted precautionary policies. These include China, Italy, Switzerland and Russia. In addition, expert panels in England, France, Germany and Russia have issued advisories discouraging children from using mobile phones.

Perhaps, it is easier for Mike to single us out than to address those who seek to protect the public health of well over a billion people, including the national government of Switzerland, WHO's host country.

As we have stated time and time again, the WHO should err on the side of public health, not the interests of the wireless industry.

We should also highlight Mike's use of the phrase "sound science." As Elisa Ong and Stanton Glantz of the University of California, San Francisco, have pointed out, these seemingly unchallengeable words were coined by the tobacco industry and other corporate interests to manipulate public opinion. Here is some of what they [wrote](#) in the *American Journal of Public Health* in November 2001:

"Public health professionals need to be aware that the 'sound science' movement is not an indigenous effort from within the profession to improve the quality of scientific discourse, but reflects sophisticated public relations campaigns controlled by industry executives and lawyers whose aim is to manipulate the standards of scientific proof to serve the corporate interests of their clients."

The WHO has long been targeted by the tobacco industry in its continuing efforts to water down control initiatives. Ong and Glantz have also [documented](#) the campaign waged against the IARC study on second-hand smoke.

A detailed [report](#) on the tobacco industry's nefarious activities was released in 2000. At that time, *Nature* ran an editorial calling for the WHO and other groups to "strengthen their guard against conflicts of interest."

As we have reported (see [MWN, N/D01](#)), a number of the players in the mobile phone controversy have also worked for the tobacco industry —most notably, George Carlo.

Where does Mike Repacholi fit in to all this? No one will know until he opens up his books and tells us who is paying the bills for the EMF charade that he runs out of the WHO offices in Geneva.

Once again, we ask: Show us the money, Mike.

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August 8, 2005

Money Talks and the WHO Follows

EPRI, the Electric Power Research Institute, the research arm of the electric utility industry, has lots of money and is not shy about using it to push its agenda.

Today, EPRI is the only source of research funds on power line EMFs in the U.S. In recent times, practically all of EPRI's money has been devoted to pushing the idea, championed by staffer Rob Kavet, that contact currents —not EMFs— are responsible for the oft-observed increase in childhood leukemia. Kavet may be on to something, but at the moment only Kavet himself and his contractors embrace this hypothesis.

Actually, there is another: The WHO EMF Project in Geneva.

EPRI was one of the sponsors of WHO's [workshop](#) on EMF risks to children, held in Istanbul last summer.

EPRI also paid Leeka Kheifets to prepare a [review](#) of the epidemiologic evidence for the EMF-childhood leukemia link. She presented a draft at the meeting; the final paper, "The Sensitivity of Children to Electromagnetic Fields," appears in the August issue of the journal *Pediatrics*, which is posted on the Internet. (You can download a complete copy of the [Pediatrics paper](#) for free.)

Most of you will remember that Kheifets was a coconspirator, with Mike Repacholi, in the infamous flip-flop over applying the precautionary principle to EMFs (see *MWN*, M/A03 and M/J03). After announcing a decision to adopt precautionary policies, they backed off without any explanation for the reversal.

Before joining Repacholi in Geneva, Kheifets worked at EPRI in California for many years, where she was Kavet's boss. She now has a position at the University of California, Los Angeles. She continues to do a lot of work for Repacholi.

Kavet's non-EMF theory gets top billing in both Kheifets's review paper, and the workshop report.

Kheifets and Repacholi, as they have done in the past, cast the EMF-childhood leukemia association as still highly uncertain due to the lack of a mechanism.

They write:

“At present there is no experimental evidence that supports the view that [the EMF-childhood leukemia] relationship is causal.”

What is left out of both papers is the fact that at least six different labs have shown that power-frequency EMFs can break DNA. It's true, we don't know how EMFs can do this, but it has been observed experimentally over and over again.

Kheifets and Repacholi *must* be aware of the DNA work.

If EMFs can break DNA, EMFs can certainly play a major role in the etiology of childhood leukemia. But this is an inconvenient fact for both EPRI's Rob Kavet and WHO's Mike Repacholi. They have common interests: In addition to both supporting Kheifets, neither wants to endorse precautionary policies to protect children from EMFs.

Here's the payoff—from the conclusion of the *Pediatrics* paper (with some emphasis added):

For ELF (power-frequency) fields, there is **some** evidence that exposure to environmental magnetic fields that are **relatively high** but well below guidance levels is associated with an increase in the risk of childhood leukemia, a **very rare** disease (even if the risk is doubled, it remains **small** at 5-8 per 100,000 children per year). Although the evidence is **regarded as insufficient to justify more restrictive limits on exposure**, the possibility that exposure to ELF magnetic fields increases risk cannot be discounted. For the physician faced with questions from, for example, a couple planning a family and concerned about this issue, or from someone pregnant and occupationally exposed to relatively high ELF magnetic fields, **standardized advice is not possible**. Instead, physicians could inform their patients of possible risk and advise them to weigh all the advantages and disadvantages of the options available to them (of which **EMF reduction is but one consideration**). Some simple options include reducing exposure by minimizing the use of certain electrical appliances or changing work practices to increase distance from the source of exposure. **People living near overhead power lines should be advised that such proximity is just an indicator of exposure and that homes far away from power lines can have similar or higher fields.**

This may read like it was written at EPRI, but the paper is signed by Kheifets, Repacholi, together with Rick Saunders (on leave from the U.K. Health Protection Agency) and Emilie van Deventer, all affiliated with the EMF project at the World Health Organization.

How much money does EPRI give the EMF project every year? How much support did EPRI provide for the Istanbul workshop? And how much did Kavet

pay his old boss Kheifets for the literature review? We don't know because Repacholi continues to refuse to open up his books.

But whatever the cost to EPRI, you can be sure that Kavet's managers back in Palo Alto, California, are pleased.

One final footnote: Kheifets was recently hired to serve as a consultant to the California Public Utility Commission (CPUC) to help develop state EMF policies. She will receive approximately \$58,000, plus expenses. In her application, she told the presiding administrative law judge that, "I believe that rigorous application of Precautionary Framework to EMF is appropriate."

Hmmmm....We wonder how we should interpret the word "rigorous." Actually, it doesn't matter. It's doubletalk. The capital "P" and "F" indicate that she is referring to Repacholi's framework and we know that neither of them has any interest in applying precautionary EMF policies (see the [July 5](#) entry, below).

When Kheifets applied for the CPUC job, she requested that her personal financial information be kept confidential because its release "would unnecessarily intrude on [her] privacy." Maybe so, but it would reveal how much EPRI and Repacholi are paying her, while she gives advice —on behalf of the rate-paying public— to California regulators.

Most surprising of all is that, in his [ruling](#) granting her request, the judge noted that not one of the many EMF activist groups in the state of California challenged Kheifets's application.

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August 13, 2005

Keep That Laptop Off Your Lap At Least Until a New Generation of Researchers Give Us Some Answers

The inside back cover of the August issue of [*Wired*](#) has an ad with a picture of a model who has a laptop on her belly. She's got a big grin on her face — apparently because her computer is protected with Symantec's anti-spyware and anti-virus software.

Putting a laptop on your body may be okay for a photo shoot, but it's probably not such a good idea to leave the computer there for a long time. In addition to [delivering heat to sensitive organs](#), there can be significant exposure to EMFs.

In fact, it's probably not a good idea to keep any electronic or electric appliance flush to your body on a regular basis.

Let me be clear: We don't know whether EMFs from appliances are a health hazard. What we do know is that some appliances give off strong localized fields with complex waveforms. While they diminish very quickly with distance, up close they can pack a wallop.

We also know that a discomfortingly large number of epidemiological studies show that long-term exposure to low-level EMFs is linked to childhood leukemia —the implicated levels are 250 times lower than the current limit for exposing children 24/7 and more than a 1,000 times lower than the occupational guidelines. (The U.S. has never adopted an EMF exposure standard.)

In addition, we know that the use of certain appliances has been associated with cancer. For instance, a 1998 National Cancer Institute (NCI) study showed that children exposed to electric blankets, hair dryers or video games had significant higher rates of acute lymphoblastic leukemia. A number of other appliances, including curling irons, were also linked to cancer.

But there were inconsistencies. The risk associated with years of use was often similar to that from short-term use —that is, there was no dose-response relationship. But that said, looking at all the NCI appliance data, you will see a large number of statistically significant elevated risks of childhood leukemia and it's hard to escape the conclusion that something is going on.

The NCI team, however, focused on the inconsistencies, threw up their hands and concluded there was nothing to worry about.

Earlier this year, the NCI published another [study](#) which linked the use of electric hair dryers and shavers with brain tumors. (Men who used electric shavers had ten times more meningiomas!) Once again, the NCI decided that it was “unlikely” that there was a true association.

One major problem with both NCI studies is that the EMFs from the appliances were not measured. The NCI team assumed that the magnetic fields from a hair dryer are identical to those from a fan or a microwave oven, except in terms of the intensity of the field. This is a primitive, though not uncommon, approach among EMF researchers. But it's like studying particulate air pollutants without specifying the size or the chemical composition of the particles. You might get an idea about effects, but it would be a very rough estimate.

By neglecting the differences among the different types of EMFs, the NCI team assumes that all appliances are sources of simple sinusoidal 60 Hz magnetic fields. No allowance is made for fields whose frequency and intensity fluctuate over time, whether other frequency components and transient are present, or whether the resulting exposures are intermittent. (In the more recent paper, the NCI team does acknowledge that hair dryers and shavers give off high-frequency transients). Another ignored variable is the polarization of the field.

Elizabeth Ainsbury, an English doctoral student of Denis Henshaw's at Bristol University, illustrates the variation in polarization of the magnetic fields associated with appliances in a [paper](#) published recently in *Physics in Medicine and Biology*. She reports, for example, that microwave and electric ovens have the most elliptically polarized fields, while alarm clocks have the least ellipticity.

(As the field becomes more circularly polarized—that is, as it become more elliptical—the greater the potential for depositing its energy into those exposed, see *MWN*, M/A00.)

Ainsbury concludes that her measurements

“demonstrate that domestic magnetic fields are extremely complex and cannot simply be characterized by traditional measurements such as time-weighted average or peak exposure levels.”

Could polarization be the missing variable that, if taken into account, would clarify the existing epidemiological and experimental data? It's far too soon to tell, but it is a tantalizing possibility.

For a long time, many have speculated that EMF epidemiological studies are cloudy because some characteristic of the field has been left out. It is as if we are

looking through a distorted prism. But with the right set of filters, we could see the EMF risk more clearly.

Five years ago, Jim Burch [showed](#) that workers exposed to circularly or elliptically polarized fields were more likely to have lower melatonin levels. And years before that Masamichi Kato in Japan reported a similar finding in animals (see *MWN*, M/A00).

Back in 2000, Burch told us his results “definitely need to be followed up.” They weren’t. (Burch has recently moved to the University of South Carolina.)

With progress coming in five-year intervals it is going to take a long time to sort all this out.

Joe Bowman at NIOSH in Cincinnati is hopeful however. “I’m encouraged to see an EMF health study measuring more than just the time-averaged magnetic field,” he told *Microwave News* in a recent interview. “Studies like Ainsbury’s will hopefully lead to a new generation of more informative epidemiologic studies.” Bowman is himself designing an epi study using the Multiwave meter developed by Electric Research, which can measure a number of field parameters including polarization. Ainsbury also used the Multiwave.

Clearly, there is much more work to be done. And until we learn more and can see the EMF problem more clearly, it’s probably a good idea to keep your laptop off your lap —especially if that computer is broadcasting RF radiation through its wireless connection to the Internet.

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September 22, 2005

WHO Welcomes Electric Utility Industry To Key EMF Meeting, Bars the Press

The week of October 3 in Geneva, the World Health Organization (WHO) will set its recommendations for public exposures to power-frequency electromagnetic fields (EMFs).

A 20-member task group from 17 countries, assembled by Michael Repacholi, the head of the WHO EMF project, will finalize an Environmental Health Criteria (EHC) document, which is designed to [guide the development of standards](#) for extremely low frequency (ELF) EMFs all over the world. It will likely represent WHO's official position on EMF health risks for years to come.

Last month, Repacholi gave eight observers the green light to attend the meeting —*all eight either work for electric utilities or have direct and strong ties to the industry*. Other than WHO staff, these are the only people on the Repacholi's list of approved observers:

Kazu Chikamoto, Japan NUS Co., Tokyo

Rob Kavet, EPRI, Palo Alto, CA, U.S.

Michel Plante, Hydro-Quebec, Montreal, Canada

Jack Sahl, Southern California Edison, Upland, CA, U.S.

Martine Souques, Electricite de France-Gaz de France, Paris

Hamilton Moss de Souza, CEPEL, Brazilian Electrical Energy Research Center, Rio de Janeiro

John Swanson, National Grid, London, U.K.

Tom Watson, Watson & Renner, Washington DC, U.S.

Although Watson is on the list, he will not be at the meeting. "I tried to become an observer, but I did not succeed," he said in a recent interview. It is not clear why Repacholi changed his mind and disinvited Watson.

Chris Portier of the U.S. National Institute of Environmental Health Sciences (NIEHS) will chair the task group.

Very few other members of the EMF community are aware of the meeting. A spot check, an admittedly unscientific survey, found that staff members at U.S. health agencies knew nothing about it. The single exception said that he had heard about it from colleagues in the electric utility industry.

When asked whether *Microwave News* could sit in as an observer, Repacholi dismissed the idea. “The press is not permitted to attend EHC Task Group meetings,” he told us.

Did Repacholi invite the industry representatives? If not, how and when did they first learn about the meeting and request observer status? Have any of the companies or associations, other than EPRI, contributed to the WHO EMF project or its activities? EPRI cosponsored a WHO workshop on EMF risks to children held last year in Istanbul (see [August 8](#) entry below), but it is not known whether EPRI’s Kavet has made other contributions to the WHO. All these questions need answering.

While Repacholi has long said that the EHC would be revised around this time, the specific schedule has not been previously publicly disclosed. For instance, the October 3-7 task group meeting is not in the [listing of meetings](#) on the WHO Web site nor is it included in the *Bioelectromagnetics Society Newsletter conference calendar*.

The WHO released its [first EHC for ELF EMFs](#) in 1984. Repacholi chaired the task group that wrote that report. Back then, 20 years ago, the panel recommended that: “efforts be made to limit exposure, particularly for members of the general population, to levels as low as can be reasonably achieved” (a policy known as ALARA). Yet for the last ten years while he has been at the helm of the WHO EMF project and while the health risks posed by power-frequency fields have become much less uncertain, Repacholi has consistently refused to endorse ALARA for ELF EMFs.

In addition to NIEHS’ Portier, the members of the EHC task group are:

Houssain Abouzaid, WHO Regional Office for the Eastern Mediterranean, Cairo, Egypt

Anders Ahlbom, Karolinska Institute, Stockholm, Sweden

Larry Anderson, Battelle Pacific Northwest Labs, Richland, WA, U.S.

Christoffer Johansen, Danish Cancer Society, Copenhagen

Jukka Juutilainen, University of Kuopio, Finland

Sheila Kandel, Soreq, Yavne, Israel

Leeka Kheifets, University of California, Los Angeles and EPRI, Palo Alto, CA, U.S.

Isabelle Lagroye, University of Bordeaux, France

Rüdiger Matthes, Federal Office of Radiation Protection, Oberschleissheim, Germany

Alastair McKinlay, Health Protection Agency (HPA), Didcot, U.K.

Jim Metcalfe, University of Cambridge, U.K.

Meike Mevissen, University of Berne, Switzerland

Junji Miyakoshi, Hirosaki University Faculty of Medicine, Japan

Eric van Rongen, Health Council of the Netherlands, The Hague

Nina Rubtsova, RAM Institute of Occupational Health, Moscow, Russia
Paolo Vecchia, National Institute of Health, Rome, Italy
Barney de Villiers, University of Stellenbosch, Cape Town, South Africa
Andrew Wood, Swinburne University of Technology, Hawthorn, Australia
Zhengping Xu, Zhejiang University School of Medicine, Hangzhou, China

Those attending from WHO include **Elisabeth Cardis** (IARC); **Chiyoji Ohkubo**, **Rick Saunders** (on leave from the U.K. HPA) and **Emilie van Deventer**.

As we post this on the Web, we have learned that **Michinori Kabuto** of Japan's National Institute for Environmental Studies will also be an observer at the meeting.

•••••

Five years ago, the Committee of Experts on Tobacco Industry Documents issued a 260-page [report](#) documenting the tobacco industry's strategies to undermine the work of the WHO. In response, the WHO issued [15 pages of recommendations](#) on how to make sure its work is never subverted again.

Nevertheless, the WHO appears to be unable to apply the hard lessons it learned from tobacco to other potentially harmful agents. Instead, the WHO now simply invites the industry to be part of the process.

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October 1, 2005

WHO and Electric Utilities: A Partnership on EMFs

As members of the WHO Task Group make their way to Geneva for next week's meeting to complete its Environmental Health Criteria (EHC) document on power-frequency EMFs, new information has emerged showing that the electric utility industry has played a major role at every stage of developing the review document.

Microwave News has learned that Mike Repacholi, the head of the WHO EMF project, recruited utility representatives to help write the original draft of the document and later asked them to review the completed draft. Then, as we reported last week, Repacholi invited eight utility representatives to attend next week's task group meeting —the only observers who were invited (see [September 22](#) entry below). The task group and the industry observers will assemble at a WHO conference room in Geneva on Monday, October 3 to recommend exposure limits.

Documents show that Leeka Kheifets played a central role in drafting the EHC document. Kheifets has had a long relationship with EPRI, the research arm of the electric utility industry. She worked for EPRI before becoming Repacholi's assistant in Geneva. Now, back in California, Kheifets recently disclosed to the *British Medical Journal* that she "works with the Electric Power Research Institute... and consults with utilities." Among those who collaborated with Kheifets on the EHC document include: Gabor Mezei, also of EPRI, Jack Sahl of Southern California Edison, the U.S. utility and John Swanson of National Grid, the U.K. utility.

Repacholi sent a draft of the EHC out for review in early July. Among those asked for comments were:

- **William Bailey**, Exponent Inc., U.S.
- **Federation of Electric Power Companies of Japan (FEPC)**
- **Kent Jaffa**, Pacificorp, U.S.
- **Michel Plante**, Hydro-Quebec, Canada
- **Utility Health Sciences Group (USHG)**, U.S.

To be sure, a number of independent researchers were also participated, but it is

highly unusual, if not unprecedented, for a WHO health document to be reviewed by so many with such strong ties to the affected industry.

Not surprisingly, most of the industry comments seek to downplay potential health risks.

Here for example is an excerpt from those filed by Plante on the epidemiology chapter:

“The whole section on cancer seems more like a desperate attempt to maintain some positive statistical association from epidemiological studies alive than a factual and honest presentation of arguments both, for and against, carcinogenicity.”

Plante, who will sit in on the weeklong deliberations at Repacholi’s invitation, has been assigned to the epidemiology working group, where he will no doubt continue to maintain that the link between EMFs and childhood leukemia is inconsequential.

Plante has played a villainous role in the EMF controversy. A decade ago, he was involved in stopping work on an epidemiological study on possible EMF cancer risks to electric utility workers. The Canadian-French study was the first—and the last—to investigate whether exposure to high-frequency transients could lead the cancer. The multi-million dollar [study](#), published in the November 1, 1994 issue of the *American Journal of Epidemiology* was considered, at the time, a landmark event. The research team led by Ben Armstrong and Gilles Thériault of McGill University found strong cancer risks as well as dose-response. Members of the EMF community were excited by the results and looked forward to follow-up efforts. But, Plante worked with others at Hydro-Quebec to shut down the McGill project by forcing Thériault to return the data he and the others had painstakingly collected (see *MWN*, N/D94). Thériault was never allowed near it again.

Jack Sahl, another invited observer who will also sit in on the epidemiological working group, was a leading member of the USHG for much of the 1990s. The USHG was the brainchild of Tom Watson, now of Watson & Renner, a law firm based in Washington. In the 1990s, all the major electric utilities in the U.S.—by one count, 76 participated—were members of the USHG. Watson was originally invited to attend next week’s meeting, but his invitation was later withdrawn. Still obscure is why Repacholi changed his mind and disinvited Watson.

It is not known who wrote the comments submitted by the USHG, but it is possible that every electric utility that is a member of the USHG was given the chance to review the WHO document and funnel its comments back to the WHO.

What is clear is that the USHG attempted to weaken the EHC document. For instance, while the draft states that, “evidence is increasing that magnetic fields could interact with DNA-damaging agents, at least in some cellular models,” the

USHG suggested that for the “sake of clarity and balance... it would be useful to include... ‘Any such effects on DNA cannot, however, be considered as established’.”

USHG also proposed the following change in the chapter on protective measures: “It should also be pointed out that ‘redirecting facilities or redesigning electrical systems may be so expensive as to be inconsistent with the low-cost and no-cost steps typically viewed as prudent avoidance’.”

Nor was the USHG bashful about promoting the utility position, arguing: “It would be useful for the summary to include a clear statement that the scientific research does not establish ELF EMF as a cause or contributing factor in any disease or adverse health effect, including cancer.”

Very useful to industry, indeed.

Thanks to Repacholi, the electric utility industry has been and continues to be a full partner in the writing of the EMF document—a document which will be the WHO’s official position on EMFs for years to come. The most disconcerting part of all is that no one at the WHO thinks he is doing anything wrong.

Source: <http://www.microwavenews.com/fromthefield.html>

[Note: clicking on underlined words will lead to direct links of referrals...H. Karow]

Commentary

From the Field

November 23, 2005

When Enough Is Never Enough A Reproducible EMF Effect at 12 mG

It's happened again.

It's not supposed to happen at all. But now it has happened seven times in research labs on three continents.

Even so, the news of the latest replication of a weak, clearly non-thermal, electromagnetic field (EMF) effect was met with silence. No one issued a press release. No one rushed to try to explain "the impossible." No one wondered about the policy implications.

And if Rainer Girgert of Germany's University of Heidelberg, the lead author of this latest replication, meets with the same fate as his six predecessors, he may soon lose his research grants—or perhaps worse, as happened to Robert Liburdy who first saw this same effect years ago.

Writing in the November 4 issue of *Biochemical and Biophysical Research Communications*, Girgert [reports](#) that a 12mG (1.2 μ T) magnetic field can block the ability of tamoxifen to control the growth of human breast cancer cells.

For more than 20 years, breast cancer patients have been given tamoxifen after surgery and chemo- and/or radiotherapy to help stave off a recurrence. It is only one of a handful of drugs that is prescribed for preventing breast cancer. Just a few days ago, less than two weeks after Girgert's paper was published, the U.S. National Cancer Institute (NCI) [announced](#) that its long-term follow-up study showed beyond reasonable doubt that tamoxifen can indeed prevent breast cancer among women at high risk of developing the disease.

Girgert was working with cells in petri dishes but it's easy to extrapolate his findings to real-world situations. Consider, for instance, what might happen to a recovering breast cancer patient who is taking tamoxifen, if her job forces her to stand in front of an office copying machine all day, or if she sits next to a wall which conceals an electrical transformer or even if she blow dries her hair every

morning.

Each day, over one million American women have an average daily magnetic field exposure of over 10mG. Many more spend an hour or longer in such fields every day.

Liburdy, then at the Lawrence Berkeley National Lab, was the first to show this same EMF effect with both tamoxifen and with melatonin back in the early 1990s (see *MWN*, J/A92). (Melatonin can also keep breast cancer cells in check.) Over the next few years, four other American research groups were able to repeat Liburdy's experiments (see *MWN*, M/A96 and J/A98).

Then in 2001, [Masami Ishido](#) at Japan's National Institute for Environmental Studies took Liburdy's discovery a major step forward. After once again showing that breast cancer cells treated with melatonin would resume growing when exposed to power-frequency EMFs, Ishido explained how the fields could do this. He found that the magnetic field disrupts the cells' signaling system—their internal communications network, which determines how they respond to their environment.

Ishido had done much more than simply replicate the work of five other labs. He had given credibility to what most others had dismissed as an anomalous experimental finding.

In the process, Ishido also challenged one of the central tenets of mainstream toxicology: Less is better and more is worse. The EMF effect he observed at 12mG was pretty much the same as the one he saw when he used a *field a hundred times higher*—at 1G. In some later, as yet [unpublished work](#), Ishido found indications that the effect was even stronger at the lower EMF dose than the higher one.

Ishido may have been uncertain about such an inverted dose-response relationship, but Girgert has no doubts. “Surprisingly, at 1G the effect on tamoxifen inhibition was clearly lower than at 100mG,” he writes in *Biochemical and Biophysical Research Communications*.

“Girgert's paper is very important,” says Carl Blackman, a research scientist at the U.S. Environmental Protection Agency (EPA). Blackman, who led [one](#) of the four groups that repeated the original Liburdy work with both tamoxifen and melatonin, points out that the Japanese and German work represent more than simple replication. “Ishido extended Liburdy's finding by investigating changes with techniques from molecular biology, while Girgert looked at the effect at different tamoxifen concentrations and EMF exposure levels,” he said. “Girgert has filled in some critical missing pieces and the 12 mG effect now rests on a much firmer foundation.”

After Ishido's work appeared in 2001, a number of leading melatonin scientists, including David Blask and Richard Stevens, told *Microwave News* that they were now convinced that the 12mG effect was real and would now be taken seriously (see *MWN*, S/O01).

They were wrong.

For instance, this summer the World Health Organization's EMF project completed what is billed as an exhaustive review of the scientific literature on EMF health and biological effects (see [September 22](#) entry below). The 365-page draft document includes more than 1,000 references —yet, somehow, the papers by Liburdy, Blackman and Ishido documenting the 12mG effect on melatonin and tamoxifen were all left out.

Nor have any of these three researchers been able to continue their work on EMFs.

In 1999, Liburdy was drummed out of the EMF profession on what many consider to be trumped-up charges of scientific misconduct. (At issue was a set of unrelated experiments.) He settled the case without admitting any “wrongdoing” but was nevertheless barred from receiving federal research funds for three years (see *MWN*, J/A99). Liburdy has, at least for the present, abandoned his career as a research scientist.

Blackman and others at the U.S. EPA are effectively barred from doing any more EMF experiments. EPA managers have made a habit of looking the other way whenever the EMF-health question is raised. No one at the agency need fear Congressional oversight. Many times over the years, the Congress has moved to eliminate any funds targeted for EMF research.

Ishido is in a similar predicament. In a recent e-mail message, Ishido told *Microwave News* that there is “no hope” that his EMF project, which has been stalled for years, will be revived.

Both Liburdy and Blackman have not given up. They are still optimistic that someone will be given the opportunity to get to the bottom of this 12 mG effect. “We were committed to pursuing these findings,” Liburdy told us in early November. “The mechanistic research would have been fascinating.” Blackman believes that there is more at stake than biophysical theories. “If we understand what's going on here, we might well find better ways to treat breast cancer,” he said.

Girgert is their last best hope.