Motorola, Microwaves and DNA Breaks: "War-Gaming" the Lai-Singh Experiments

The following documents, recently obtained by Microwave News, *provide a rare behind-the-scenes glimpse of how a large corporation responds to the results of scientific research. On December 13, 1994, Norman Sandler of Motorola's corporate communications department sent two memos to Michael Kehs of the Burson-Marsteller public relations firm in Washington. Sandler discussed how to respond to findings by Drs. Henry Lai and Narendra Singh of the University of Washington, Seattle, and enclosed an eight-page draft of an internal strategy paper on the Lai-Singh work.*

Lai and Singh had found an increase in single-strand DNA breaks in the brain cells of rats after a single two-hour exposure to 2.45 GHz microwaves, at power levels considered safe according to current exposure standards. These results had not yet been published, but—as Motorola's strategy paper noted—they were about to be reported by Microwave News *(see* MWN, *N/D94; also J/F95, M/A95, J/A95, N/D95, J/F96 and M/J96).*

Below are the full text of one of the memos and excerpts from the internal strategy paper, which Sandler and Kehs were editing. "Rusty," referred to in the memo, is Albert R. Brashear, a Motorola corporate vice president and director of corporate communications. Bob Weisshappel is an executive vice president, and manager of Motorola's Cellular Subscriber Group.

MEMORANDUM

To: Michael Kehs — *Date:* December 13, 1994
From: Norm Sandler — *Re:* Revision of Lai-Singh Materials

Rusty just had an animated telephone conversation with Bob Weisshappel, who was as insistent as ever about the prominent inclusion of the frequency differentiation argument in our materials. He also was adamant that we have a forceful one- or two-sentence portion of our standby statement that puts a damper on speculation arising from this research, as best we can.

I tried to do that in the latest proposed revision of the standby statement, but offer this new, somewhat strengthened version of the second paragraph for consideration:

"While this work raises some interesting questions about possible biological effects, it is our understanding that there are too many uncertainties—related to the methodology employed, the findings that have been reported and the science that underlies them—to draw any conclusions about its significance at this time. Without additional work in this field, there is absolutely no basis to determine whether the researchers found what they report finding—or that the results have anything at all to do with DNA damage or health risks, especially at the frequencies and power levels of wireless communication devices."

In discussing the frequency differentiation issue, we should be able to say that Lai-Singh and Sarkar[1]: • Were not conducted at cellular frequencies, so are of questionable relevance; • Run counter even to other studies performed at 2450 MHz, raising possible questions about the findings.

I can accept that as a logical way to raise and defend the frequency differentiation argument. Where I think we differ is in the prominence it should be given in our public statement(s). Maybe the construction proposed above, which hits the frequency/power level issue right off the bat without making a federal case out of it, will suffice.

I'm off to Dallas, but obviously am reachable if necessary. I'm hoping we can get this document revision out of the way and return to more pressing matters (at least in terms of long-term priorities). I think we have sufficiently war-gamed the Lai-Singh issue, assuming SAG[2] and CTIA[3] have done their homework. We may want to run this by George Carlo[4] and fill him in on the contacts we've made.

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Excerpts from
Confidential Working Draft #3 — 12/13/94
Developments in Radiofrequency/DNA Research: Position Paper

Question and Response

How can Motorola downplay the significance of the Lai study when one of your own expert consultants is on record telling Microwave News *that the results—if replicated—could throw previous notions of RF safety into question?*

It is not a question of downplaying the significance of the Lai study. In his comments to *Microwave News,* Dr. Sheppard[5] raised the key question: Can this experiment be replicated and interpreted? We will have to wait and see. Until the results of follow-up studies are in, any conclusions about the significance of this study are pure speculation.

There is another reason to caution against jumping to drastic conclusions—the hypothesis doesn't square with human experience. If cellular radio signals could cause DNA damage, we would expect to see increased cancer rates among people exposed to RF energy. But there is no evidence to suggest this is the case.

What studies can you cite to prove RF energy doesn't *affect DNA?*

We have identified at least 18 published studies of animal and cell cultures exposed to electromagnetic fields (microwave frequencies, RF and ELF) that show no effect on DNA.

Action Planned

In addition to the response materials already prepared by the SAG (see attached copies), we will work with the SAG to identify appropriate experts to comment in general on the science of DNA research, in addition to any experts SAG may be able to recommend to publicly comment on one or both of these particular studies.

Media Strategy

It is not in the interest of Motorola to be out in front on this issue because the implications of this research—if any—are industrywide. Therefore, we suggest that the SAG be the primary media contact followed by the CTIA. It is critically important that third-party genetic experts, including respected authorities with no specific background in RF, be identified to speak on the following issues:

- Problems with the Lai-Singh and Sarkar studies.
- The health implications of DNA single-strand breaks.

We do not believe that Motorola should put anyone on camera. We must limit our corporate visibility and defer complex scientific issues to credible, qualified scientific experts. We have developed a list of independent experts in this field and are in the process of recruiting individuals willing and able to reassure the public on these matters. SAG will be prepared to release Munro[6]-Carlo memos, which touch on key points made in this material.

1. Dr. Soma Sarkar of the Institute of Nuclear Medicine and Allied Sciences in New Delhi, India, who had published related findings earlier in the year.
2. The Scientific Advisory Group, now known as Wireless Technology Research (WTR), based in Washington, DC.
3. Cellular Telecommunications Industry Association, based in Washington, DC.
4. Dr. George Carlo, chair of the SAG/WTR.
5. Dr. Asher Sheppard, a consultant based in Redlands, CA.
6. Dr. Ian Munro of CanTox in Mississauga, Canada, one of the three members of the SAG/WTR.