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In the U.K.: Calls for More Wi-Fi Health Research

May 1... U.K. newspapers ran another batch of power line and Wi-Fi stories last weekend. The **BBC**, the ***Guardian*** and the ***Times*** all featured items on EMFs following the formal release of the **SAGE report**, which presented policy options to address EMF health risks. The ***Daily Mail*** profiled Sarah Dacre and her travails with electrosensitivity. And the *Independent* and the ***Telegraph*** continued to focus on public anxiety over the proliferation of Wi-Fi systems, especially in schools.

Lawrie Challis, the head of the U.K. **Mobile Telecommunications and Health Research Program**, warned that children should not put RF-transmitting computers on their laps. Denis Henshaw and Alan Preece, both of Bristol University, called for more research on Wi-Fi. "The research hasn't been done. Therefore we cannot assume that there are no effects," Henshaw told the *Independent*.

Henshaw and Preece are quite right. Very little health research has been done on Wi-Fi, but that's also true for all the other wireless technologies. What specific studies would fill the gaps and assure parents that their children are safe at school? Should we start tracking those kids who have Wi-Fi in their classrooms? If so, for how long? Ten years? Twenty? How could the possible effects of one set of RF radiation exposures be distinguished from those from other sources? For instance, most school children now have cell phones, live near cell towers, and have their own Wi-Fi systems at home (cable and DSL broadband modems set them up automatically). And anyone living in central London will be in the largest municipal Wi-Fi system in Europe. Is anyone studying that? We doubt it.

We are all awash with RF signals at work, at home, at school and most places in between. And this is just the beginning. The wireless revolution is still in its early stages. If we are serious about learning the health consequences of RF exposures, we must invest—heavily and over many years—in understanding the underlying biophysical basis of electromagnetic interactions. Otherwise, we will continue to ricochet from one set of scary headlines to another with little to show for it.

Bee Colony Collapse: RF Radiation Role Unlikely

May 7... We have to admit that we are skeptical about the much-hyped hypothesis that mobile phone radiation is at least partially responsible for the disappearance of bees—if only because of the timing of these colony col-

(continued on p.2)

lapses. If microwaves are involved, bee disorientation would most likely be an acute effect. Yet mobile phones and their towers have been around for many years. So, why are the bees flying away, never to return, now? That said, we were nevertheless taken aback when we read in this mornings Wall Street Journal that the National Wildlife Federation has inaugurated its own cell phone service. **NWF Mobile** is "tailored to wildlife enthusiasts and activists," the Journal reports, with such features as "ringtones that croak like frogs and chirp like birds" and the ability to provide updates on environmental news. Can a "buzz" ringtone be far behind?

Now in Print: Study on Cell Phones and Sperm Counts

May 8... A study that stirred worldwide uneasiness last fall—as well as quite a bit of disbelief—is now in print. In October, Ashok Agarwal of the Cleveland Clinic presented a paper at a fertility conference showing that men who used their cell phones for more than four hours a day had poorer semen quality than those who went phone-free (see *MWN*, **October 26 & 27, 2006**). Agarwal's **paper** has been posted on the Fertility and Sterility Web site and will appear in a forthcoming issue of the journal. Here is his conclusion: "Use of cell phones decrease the semen quality in men by decreasing the sperm count, motility, viability, and normal morphology. The decrease in sperm parameters was dependent on the duration of daily exposure to cell phones and independent of the initial semen quality."

EC & Swedish Panels Downplay Mobile Phone–Tumor Links

May 9... More health research is needed for all EMF frequency bands, according to the newly-released **report** by the EC's Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR). (See also the **press release** and **news item**.) Anders Ahlbom of the Karolinska Institute in Stockholm is the chair of the committee.

With respect to the possible risks following the long-term use of a cell phone, the SCENIHR acknowledges "some evidence of an association" with acoustic neuromas. But for brain tumors, the committee states that "it does appear that there is no increased risk" among long-term users. This is surprising given the release of the **Lahkola study** in January. Lahkola found a higher incidence of gliomas on the same side of the head the phone was used after ten or more years of exposure. These are the same criteria for which the strongest association was found for acoustic neuromas. Karolinska's Maria Feychting, a former student of Ahlbom's and now his colleague and frequent collaborator, is a coauthor of the Lahkola study.

As we noted at the time, the Lahkola study prompted both the SSI and its German counterpart to reiterate their advice to be cautious with respect to the use of cell phones (see *MWN*, **February 1 & 5**).

A separate **assessment**, carried out for the Swedish Radiation Protection Authority (SSI) and released in March, downplayed both the acoustic neuroma and the brain tumor risks. A possible acoustic neuroma link was called only "a concern." As for brain tumors, the SSI panel wrote that the "majority of the evidence...speaks against an association." Ahlbom also chaired this panel and Feychting served as its scientific secretary.

Just last month, Ahlbom, Feychting and others made the point that long-term cancer risks cannot be excluded (see *MWN*, **April 18**). But we have moved beyond that point: Lahkola tells us that they are now a real possibility. Why are they soft-pedaling the tumor risks? Perhaps not to alarm the public, perhaps not to alienate funding sources, perhaps because epidemiologists can never prove causality. Whatever the reasons, the public needs to know that these risks are no longer purely speculative—albeit still uncertain. At the very least, greater awareness may prompt parents to think twice before giving their young children cell phones.

Rationalizing ICNIRP's 1,000 mG Exposure Limit

May 21... It's the murky disconnect that undermines public confidence in EMF exposure standards: While epidemiological studies point to an increased risk of childhood leukemia at exposures as low as 3-4 mG, the **ICNIRP** exposure standard is over 200 times higher. That is, ICNIRP sees nothing wrong with exposing kids to 999 mG, 24/7. One reason this disparity is baffling is that **Anders Ahlbom** of Sweden's Karolinska Institute is both the chair of ICNIRP's committee on epidemiology and the person whose work—more than anyone else's other than Nancy Wertheimer's—has established the plausibility of the 3-4 mG threshold. The IEEE standard is even more out of sync: At over 9,000 mG: it's more than nine times higher than the ICNIRP limit.

Joachim Schüz, a prolific epidemiologist at the Danish Cancer Society in Copenhagen, and an up-and-coming member of the EMF establishment, offered a justification for the 1,000 mG limit at an ICNIRP workshop held in March 2006 in Berlin. The childhood leukemia–EMF association "is neither supported by experimental evidence nor by a plausible [mechanism]... It cannot be ruled out with reasonable confidence that the observed association is entirely due to chance, bias, and confounding."

Schüz calls for "a careful evaluation of a possible benefit" before adopting precautionary measures, and favors "proper risk communication" over "[precipitous] actions to calm emotions." Schüz's views are in line with those of **Paolo Vecchia** and **Mike Repacholi**, the current and a former chair, respectively, of ICNIRP.

Are precautionary policies for power-frequency EMFs called for? Repacholi thought so a few years back before he flip-flopped (see *MWN*, **M/J03**, p.1). (Some say he reversed himself under pressure from the electric utility industry.) Should others follow the lead of Italy and Switzerland, which have recognized and accepted the epidemiological findings and adopted tougher limits? Are Repacholi, Schüz and Vecchia's current views sustainable? All these questions will no doubt be raised at a workshop being organized by the WHO EMF Project. ***Developing and Implementing Protective Measures for ELF EMF*** will be held in Geneva, June 20-21.

Schüz's **paper** and the 18 others presented at ICNIRP's 2006 ***International Workshop on EMF Dosimetry and Biophysical Aspects Relevant to Setting Exposure Guidelines*** appear in the June issue of ***Health Physics***.

NAS Selects Members for Cell Phone Review Committee

May 24... Rick Jostes at the National Academy of Sciences (NAS) has announced his picks for the **members** of the **committee** that will review the current state of cell phone health research and identify future needs. **Frank Barnes** of the University of Colorado, Boulder, will chair the panel. Of the other six members, three are with **ICNIRP**: Finland's **Maila Hietanen**, Germany's **Rüdiger Matthes** and France's **Bernard Veyret**. The other members are **Om Gandhi** of the University of Utah, **Leeka Kheifets** of UCLA and **EPRI** and **David McCormick** of **IITRI** in Chicago. Kheifets, who serves on ICNIRP's epidemiology panel, used to be Mike Repacholi's sidekick at the WHO EMF project in Geneva. McCormick is planning some large-scale RF-animal experiments for the National Toxicology Program. The FDA requested these studies back in 1999.

The FDA requested that the NAS take up this project earlier this spring (see our **March 30** post). It's being paid for by the wireless industry trade association, **CTIA**. Jostes has scheduled a planning meeting for July 9-10 and a workshop for August 7-9. Both will be held in Washington.

The NAS is inviting public comments on Jostes's selections. (We bet the FDA and the CTIA are pleased.) The appointments are provisional, for the next 17 days, until the membership is finalized.

Different Cell Types Respond to RF Differently

May 29... Every now and then a new paper comes along that gives hope that one day we'll make sense of the conflicting results that have become the hallmark of EMF research. A team of Finnish researchers from the University of Kuopio has published such a **paper**. It's in the June issue of the International Journal of Radiation Biology.

Anne Höytö, Jukka Juutilainen and Jonne Naarala have shown that the type of cells used in in vitro studies can determine whether they will respond to RF radiation. They ran the same experiment with primary cells—those taken directly from an organism—and with secondary cells—those that have been grown in a petri dish. They exposed both types of cells to two different RF signals, CW and modulated (GSM), at various intensities (SAR =1.5, 2.5 or 6 W/Kg) for various amounts of time (2, 8 or 24 hr), and then measured the activity of ODC (ornithine decarboxylase), an enzyme related to cellular growth and differentiation.

The results are startling. "In experiments with rat primary astrocytes, [highly] statistical differences [in ODC activity] were

found at all exposure levels and signals," they reported. (**Astrocytes** are brain cells.)

The Finns tried three different types of secondary cell lines. All were unresponsive under the various exposure conditions, with only a few isolated exceptions.

These findings raise a number of questions that need to be answered. For instance, the Finns did not see a difference in ODC activity in the primary cells between modulated and unmodulated signals (GSM vs. CW). And while they saw changes after a 2 hr and an 8 hr exposure, they did not see any after a 24 hr exposure.

Yet, the Finnish researchers are the first to check for variations in the responses of primary and secondary cell lines and, as they themselves remarked, their results are "very interesting." They went on to point out that primary cells better represent "normal tissues" than do secondary cell lines. That is, primary cells are more likely to behave like those in a functioning organism. [Neither Höytö nor Juutilainen answered a request for further comment.]

While others (for example, **Craig Byus & Ross Adey**) have seen increased ODC activity following RF exposure, the Finns saw a decrease. But as the Kuopio team explains, a decrease in ODC could impair a cell's ability to protect DNA from free radical attack. This means, for instance, that mobile phone radiation could lead to an increase in DNA breaks.