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### CLASSIFIEDS pp.16-20

## RF/MW-Exposed Soldiers Have More Leukemia and Lymphoma

Polish military personnel exposed to radiofrequency and microwave (RF/MW) radiation had significantly higher rates of leukemia and lymphoma than those who were not exposed, according to a new study by Dr. Stanislaw Szmigielski of the Center for Radiobiology and Radiation Safety and the Military Institute of Hygiene and Epidemiology, both in Warsaw. The risk of developing these cancers was more than eight times the expected rate for younger soldiers.

"These new results support our previous findings of a cancer link," Szmigielski told *Microwave News*. The epidemiological study, the most detailed ever of an RF/MW-exposed population, spanned a 15-year period, surveying an average of 127,800 soldiers a year, of whom, on average, 3,720 were exposed to RF/MW radiation. The exposed personnel's overall risk of all types of cancer was about double that of the controls. For leukemia and lymphoma, the risk rose to more than six times the expected rate for all age groups and to over eight times for those servicemen between the ages of 20 and 49. All of these risks are statistically significant (see table on p.14).

Szmigielski, a professor of pathology at the center's Department of Biological Effects of Non-Ionizing Radiations and a former member of the editorial board of *Bioelectromagnetics*, reported elevated rates of most lymphoma and leukemia subtypes, both acute and chronic. All of these risk estimates were based on a very small number of cases, however. Szmigielski identified a total of 25 cases of leukemia and lymphoma among the exposed soldiers—one to three cases per year—and 133 cases among the controls.

(continued on p.14)

## Conflict Over NCRP Review of Modulated RF/MW Radiation

A newly chartered committee of the National Council on Radiation Protection and Measurements (NCRP) addressing health standards for modulated RF/MW radiation is already causing controversy. At issue is the committee's mission and makeup.

NCRP Committee 89-4 was established earlier this year to consider how to include modulation—for instance, the pulsed signal of a digital cellular phone—in setting RF/MW safety standards. The Environmental Protection Agency (EPA), which requested this two-year NCRP study and which is supporting it under a \$150,000 agreement, is concerned that the committee has deviated from its original charge to define the structure of modulation-based standards, and is instead planning to recommend new limits.

"We do not anticipate the committee focusing on possible health impacts of pulse modulation," Dennis O'Connor of EPA's Office of Radiation and Indoor Air (ORIA) told *Microwave News*, explaining that the primary focus

(continued on p.14)

## « Power Line Talk »

Dr. **Jeffrey Saffer** and **Adam Lacy-Hulbert** have published letters in *Nature*, one of the world's leading science journals, describing their inability to replicate the HL-60 **gene expression** experiments of Drs. **Reba Goodman** and **Ann Henderson** (see *MWN*, J/A94 and J/F95). Writing in the May 4 issue, Saffer and Sarah Thurston, both of the Battelle Pacific Northwest Labs in Richland, WA, argued that Goodman and Henderson's experiments lacked "essential controls." They framed their comments as a follow-up to another recent letter in *Nature*, which concluded that the results of all *in vitro* EMF experiments are suspect because of possible contamination by ferromagnetic particles (see *MWN*, M/A95). Saffer and Thurston reported that their "extensive series of experiments," which failed to show an EMF effect, led them to "question the entire notion that changes in gene expression can be induced by magnetic fields." They concluded with the following statement: "Thus it is not necessary to invoke magnetite as an explanation for these effects, which in fact may not exist." Asked by *Microwave News* whether they were referring to gene expression or to all magnetic field effects, Saffer replied: "I do not believe that there has been a single demonstration of an *in vitro* effect that *proves* weak magnetic fields are capable of affecting cellular processes" (his emphasis). In a response submitted to *Nature*, Goodman, of Columbia University, and Henderson, of Hunter College, both in New York City, stated, in part, that they continue to have "confidence" in their data and questioned whether Saffer and Lacy-Hulbert faithfully followed their experimental protocols. Goodman told *Microwave News* that she had asked the editors of *Nature* to publish her and Henderson's reply in the same issue as the Saffer and Lacy-Hulbert letters, but that *Nature* had refused. Goodman stressed that over the last year she had repeated her experiments with all the suggested controls and continued to see changes in gene expression, albeit at rates that were smaller than originally reported—an average 40-45% increase in *c-myc* transcript levels after a 20-minute exposure to a 67 mG, 60 Hz magnetic field, down from a two-to-fourfold increase. These new results have been accepted for publication in *Bioelectromagnetics*, she said. *Nature* ran Saffer's and Lacy-Hulbert's letters under the headline, "Cancer Risk and Electromagnetic Fields," which probably explains why newspapers—for instance, the May 4 *Seattle Post-Intelligencer*—announced that Saffer and Lacy-

Hulbert had found no evidence of a power line-cancer link.

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In June, the Public Broadcasting System's investigative reporting series *Frontline* will look at EMF health risks in a program titled "Currents of Fear." Among those who have been interviewed for possible inclusion in the program are Dr. Gary Boorman, Paul Brodeur, Dr. Patricia Buffler, Dr. David Carpenter, Dr. Jeffrey Saffer and Dr. David Savitz, as well as several physicists and grass-roots activists. "We're taking a really hard look at the science, at what people's concerns are based on," said *Frontline*'s Michelle Nicholason. "It's certainly not a scathing critique, but it's a hard analysis." Nicholason also said that, "There have been a lot of human interest stories already, and we wanted this to be something different." While the BBC in Britain has done two hour-long programs on the EMF issue, this will be the first examination of this length to appear on U.S. television. The program has a June 13 national air date.

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EMFs are hot at Harvard. About a year ago, the Center for Risk Analysis at the School of Public Health set up the **Harvard Advisory Committee on EMF and Human Health** with the help of the Electric Power Research Institute (EPRI) and the Edison Electric Institute (EEI) (see *MWN*, J/A94). In February, Dr. **David Savitz** of the University of North Carolina, Chapel Hill, went to Boston to debate the possible EMF-cancer link with Dr. **Dimitrios Trichopoulos**, the chairman of the school's department of epidemiology. Savitz spoke in favor of a policy of prudent avoidance, while Trichopoulos voiced his well-known skepticism about any health risks at all, according to a report in the Spring issue of the *Harvard Public Health Review*. The quarterly's editors see the link as "inconclusive," offering the conclusion that, "Taken as a group, the studies amount to a scientific Rorschach test in which the pattern that emerges depends on who is looking." Indeed, that appears to be true for the members of the EMF advisory committee. A special issue of the center's newsletter, *Risk in Perspective*—"Workers, EMFs and Cancer" (see also p.11)—illustrates the divergence of views among members of the committee, most of whom work in the field. Asked their level of confidence (on a scale of 0-100) that EMFs cause leukemia, the opinions ranged from a low of 10 to a high of 75. For brain and breast cancers, the spreads were even greater: 5-75 and 3-85, respectively. Later this summer, the Harvard School of Public Health will be teaming up with Boston Edison, Con Edison, EEI, EPRI and Northeast Utilities, among others, to present a three-day course on *EMF Health Research: State of the Science* and a one-day symposium on *EMF Bioeffects: Linking Biophysics with Biology*. The course costs \$695, but the symposium is free. The directors for both events are Drs. Joseph Brain of Harvard, EPRI's Robert Kavet and Peter Valberg of the Gradient Corp in Cambridge, MA.

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Attorneys for the Jordan family filed their brief in the Georgia Court of Appeals in Atlanta on May 15. Last May, a jury rejected **Nancy and Larry Jordan's** claim that EMFs from **Georgia Power Co.** and **Oglethorpe Power Co.** power lines were responsible for Nancy Jordan's lymphoma (see *MWN*, M/J94 and J/A94). Bruce DeBoskey of Silver & DeBoskey in Denver, one of the Jordans' attorneys, said it took almost a year to file the brief because "we were waiting for a copy of the trial transcript, which runs 15 volumes." Todd Terrell, a spokesperson for Georgia Power, said that the utility is ready to file its brief on June 5. Oral arguments are scheduled for June 7. "We could have a decision by the end of the year," DeBoskey predicted.

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The **insurance industry** is growing increasingly concerned about what would happen if a plaintiff won an EMF personal injury lawsuit. The resulting claims could far outweigh "the financial capability of the insurance industry," according to Dieter Kohl, underwriting manager of Frankona Ruckversicherungs in Munich, Germany. Kohl, whose comments were reported in the April 11 *Journal of Commerce*, spoke at the biennial conference of the London (U.K.) Insurance and Reinsurance Market Association. The potential impact was also a topic in San Francisco at the annual conference of the New York City-based Risk and Insurance Management Society: "I would suggest that EMF may well be the next asbestos," said David Brickell, director of Risk Control Services for Willis Corroon Corp. of Arizona in Phoenix, in remarks reported in the May 8 *National Underwriter*. Brickell provided the San Francisco meeting with copies of *EMF Litigation: Overview and Trends* by attorney **Mark Warnquist** of the Denver office of LeBoeuf, Lamb, Greene & MacRae. In the report, Warnquist, who recently defended Seattle City Light in the Pilisuk case (see p.6), pointed out that EMF litigation has been around for two decades, but that until recently lawsuits were both few and sporadic. "The situation has changed substantially in the 1990s," he advised, adding that hundreds of scientific studies and increased awareness have made EMFs "a high profile" litigation issue. Just how high profile remains to be seen. David Katz, the *National Underwriter's* assistant managing editor, said that EMF liability is "definitely on the agenda" but added, "It's not clear that it's up to the level of asbestos." Still, from a utility perspective, fully 96% of risk managers rate EMFs as their top concern, according to the 1995 *U.S. Risk Management Survey*, conducted by **Alexander & Alexander**, the New York City-based insurance advisers. And Warnquist notes that electric utilities alone have been involved in more than 400 EMF cases and an increasing number of plaintiffs' lawyers with backgrounds in asbestos are now entering the EMF litigation arena. "We should...expect a protracted battle over EMF," he wrote, but "if we remain vigilant in defending EMF claims, we should continue to be successful."

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## **NJ Advisory Group Again Seeks 50% Cut in EMFs from New Lines**

A New Jersey advisory committee has issued another draft of proposed rules calling for a 50% reduction in the magnetic fields from new or modified lines of 100 kV or more. Lines of 26 kV or higher would be studied for possible future regulation. The Advisory Committee on Non-Ionizing Radiation (ACNIR), an offshoot of the state Commission on Radiation Protection, released a similar draft in October 1993 (see *MWN*, N/D93).

Dr. Daniel Wartenberg of the Environmental and Occupational Health Sciences Institute in Piscataway, NJ, ACNIR's chair, said that the committee had spent the past year and a half gathering more data to strengthen the draft proposal—but only with partial success. "The utilities haven't given us a full breakdown of the economic costs of line construction," Wartenberg told *Microwave News*. "But we have learned enough to estimate that a 50% reduction in magnetic fields can be achieved with a 50% increase in construction costs, which amounts to less than 1% of the total cost of operating that power line over its lifetime."

The rationale behind the draft proposal is that power line EMFs should be "as low as reasonably achievable," better known as "ALARA." The ALARA strategy was advocated in New Jersey as early as 1990 by Wartenberg's predecessor, Dr. Fred Sterzer (see *MWN*, J/A90). The current proposal notes that the "inconsistent results" of health studies "preclude their use for the development of scientifically defensible exposure limits."

The draft proposal was announced in the May 1 *New Jersey Register*. After ACNIR considers the public comments, which are due by July 15, a revised draft will be submitted to the commission, which will decide whether or not to make it a formal proposal. Wartenberg expects the entire process to take at least another year. For more information or for a copy of the proposal, contact Wartenberg at (908) 445-0197, Fax: (908) 445-0784.

**Michael Hiles** has left **NoRad Corp.**, the company he had led since 1985, to start **Field Management Services Corp.** (FMS), an EMF measurement, mitigation and consulting company. NoRad, in Carson, CA, markets glare and static screens for computer monitors, electric and magnetic field meters and ELF ProTech, a device that can redirect magnetic fields away from a computer user. Michelle Hartzell, who had been in charge of NoRad's corporate communications, has become the new president and CEO. Hiles will be working with two EMF consultants, Jon Munderloh and Kenneth Griffing, who had also been at NoRad, as well as with Per Forsgren, the former director of R&D at Stockholm Energi in Sweden. FMS has its headquarters in Los Angeles, with offices in Charlotte, NC, and Stockholm.

## There Is No EMF Problem, Says the American Physical Society

The American Physical Society (APS) has declared that science has not substantiated “conjectures relating cancer to power line fields.” In a short statement, approved by APS’ governing body on April 22, the group declared that there is “no consistent, significant link” between electromagnetic fields (EMFs) and cancer and that “no plausible biophysical mechanisms for the systematic initiation or promotion of cancer...have been identified.” Indeed, “the preponderance of the epidemiological and biophysical/biological research findings have failed to substantiate those studies which have reported specific adverse health effects,” the statement stressed.

The APS, which has 43,000 members, further contends that mitigation costs are not commensurate with any risk that might exist. (For the full text, see box below.)

“We’ve been tracking the issue for about seven years,” Dr. Robert Park, APS’ director of information and a professor of physics at the University of Maryland, College Park, told *Microwave News*. “During that time, I think most physicists were skeptical that there could be a connection between...power line fields and cancer for a variety of reasons.” Laboratory research and bigger and better epidemiological studies failed to allay public fears, Park explained, and so the APS panel on public affairs finally decided to look at the issue more closely.

The APS statement was based on an 18-page review, *Power Line Fields and Public Health*, prepared by Dr. David Hafemeister of California Polytechnic State University in San Luis Obispo. In his report, based on reviews of EMF health effects, research papers and interviews, Hafemeister concluded that “spending considerable funding to mitigate ELF [extremely low frequency EMFs] under the guidance of ‘prudent avoidance’ would make sense if the ELF risk were documented

and some measure of cost-effectiveness could be determined. This is not the case....”

Park said that Hafemeister, who is the head of the 19-member APS public affairs panel, had volunteered for the review about a year ago: “Someone had to do it and we are all grateful that he did.” Other APS members helped, Park added, but he would not identify them. Hafemeister, who served as a U.S. Senate committee aide from 1990 to 1993, has worked on nuclear proliferation issues. He did not return telephone requests for an interview.

APS’ governing council approved the position statement by a vote of 29-1 (17 members were absent). The single negative vote was cast by Dr. Albert Wattenberg, professor emeritus of physics at the University of Illinois, Urbana, who felt that the statement was not strong enough. “The cancer rate should have increased many thousandfold if you could get it from ordinary power lines,” Wattenberg told *Microwave News*.

Other council members include Dr. Allan Bromley of Yale University in New Haven, CT, who was President Bush’s science adviser and who will become APS president in 1997, and Dr. Steven Koonin of CalTech in Pasadena, CA, who prepared an EMF report on behalf of the JASONs, a high-level advisory group on defense issues (see *MWN*, S/O93).

*New York Times* science writer William Broad, who once compared concerns over EMFs to claims about space aliens, publicized the APS statement in the May 14 *Times* in an article headlined “Cancer Fear Is Unfounded, Physicists Say” and subtitled “Power Line Concern Is Called Needless.” It was widely syndicated and reprinted in the U.S. and abroad.

On May 20, the *Times* ran a response from Dr. Daniel Wartenberg of the Environmental and Occupational Health Sciences

### APS Statement on EMFs

*Reprinted below is the text of the Washington-based American Physical Society’s statement on Power Line Fields and Public Health. It is based on an 18-page report prepared by Dr. David Hafemeister, which is available on the Internet at the following address: <http://www.calpoly.edu/~dhafemei>. Hafemeister’s detailed resume is also available at this address.*

Physicists are frequently asked to comment on the potential dangers of cancer from [EMFs] that emanate from common power lines and electrical appliances. While recognizing that the connection between power line fields and cancer is an area of continuing study by research workers in many disciplines in the United States and abroad, we believe that it is possible to make several observations based on the scientific evidence at this time. We also believe that, in the interest of making the best use of the finite resources available for environmental research and mitigation, it is important for professional organizations to comment on this issue.

The scientific literature and the reports of reviews by other panels show no consistent, significant link between cancer and power line fields. This literature includes epidemiological studies, research on biological systems, and analyses of theoretical interaction mechanisms. No plausible biophysical mechanisms for the system-

atic initiation or promotion of cancer by these power line fields have been identified. Furthermore, the preponderance of the epidemiological and biophysical/biological research findings have failed to substantiate those studies which have reported specific adverse health effects from exposure to such fields. While it is impossible to prove that no deleterious health effects occur from exposure to any environmental factor, it is necessary to demonstrate a consistent, significant, and causal relationship before one can conclude that such effects do occur. From this standpoint, the conjectures relating cancer to power line fields have not been scientifically substantiated.

These unsubstantiated claims, however, have generated fears of power lines in some communities, leading to expensive mitigation efforts, and, in some cases, to lengthy and divisive court proceedings. The costs of mitigation and litigation relating to the power line-cancer connection have risen into the billions of dollars and threaten to go much higher. The diversion of these resources to eliminate a threat which has no persuasive scientific basis is disturbing to us. More serious environmental problems are neglected for lack of funding and public attention, and the burden of cost placed on the American public is incommensurate with the risk, if any.

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Institute in Piscataway, NJ. Wartenberg, a member of the National Academy of Sciences' committee reviewing EMF health risks, argued that APS' logic "flies in the face of conventional science" because "in nine of 11 epidemiology studies of children, those with leukemia lived closer to 'high exposure' power lines more often than those without leukemia" and "in the four most recent and most sophisticated occupational epidemiology studies, workers in three of the four studies showed elevated leukemia and brain cancer rates."

Physicists have long been skeptical of an EMF-cancer link. A year ago, Dr. Robert Adair, a physicist at Yale University, suggested that "the fear of power lines springs from the human need to find an explanation for everything bad that happens" (see *MWN*, M/J94). And Bromley has written that the growing public concern about EMFs is unjustified by available research (see *MWN*, S/O94). Bromley was accused in 1990 of trying to suppress a report from the Environmental Protection Agency that suggested a possible link between EMFs and some types of cancer (see *MWN*, M/J90 and N/D90).

## **California Supreme Court To Hear Appeal in Covalt Case**

The California Supreme Court has agreed to review the dismissal of *Covalt v. San Diego Gas & Electric* (SDG&E). The Court of Appeal in Santa Ana had ruled that this EMF claim did not belong in court because it fell under the jurisdiction of the California Public Utilities Commission (CPUC). The lower court's decision has already had a major impact on other EMF lawsuits, and some observers have predicted that if it is sustained, it will end all EMF litigation in California.

On May 11, four of the seven members of the Supreme Court agreed to hear an appeal in *Covalt*. The Covalt family's lawyer, Michael Withey of the Seattle firm of Schroeter, Goldmark & Bender, said in an interview that the Supreme Court would probably hear the case this fall, and hand down a decision in 1996.

*Covalt v. SDG&E* is a property-devaluation suit, and one of the many controversies about the Court of Appeal ruling is whether it establishes CPUC jurisdiction over personal injury cases. A March 30 decision in Orange County Superior Court held that it does not. Southern California Edison Co. (SCE) failed to convince Judge Phillip Cox that *Covalt* required dismissal of *Muir v. SCE*, in which Douglas Muir asserts that three 4 kV power lines outside his bedroom window led to his non-Hodgkin's lymphoma (see *MWN*, M/A95).

In *Ford v. Pacific Gas & Electric* (PG&E), however, the decision went the other way. PG&E lawyer Roger Rizzo of Sedgwick, Detert, Moran & Arnold in San Francisco said in an interview that the judge had accepted his argument that the case fell under the jurisdiction of the CPUC and threw the suit out of court on May 22. *Ford* involves a telephone line worker who died of brain cancer (see *MWN*, M/A95).

That same day, SCE petitioned the state Supreme Court to address the personal injury issue directly by considering another case, *Younkin v. SCE*, along with *Covalt*. "We would hope," explained SCE house counsel John Tinker, "that if they

thought *Covalt* was important enough to review, they would want to consider the whole issue and not just a part of it." The Younkin case involves a cancer cluster in a real estate agency a floor above some SCE transformers (see *MWN*, J/A94).

"I think that they should decide both issues, and I think that they will," said Annee Della Donna of the firm of Wylie Aitken in Santa Ana, who represents the plaintiffs in both the Muir and Younkin cases. "Since the issue is a jurisdictional one, it's so primary that it's got to get resolved soon." Tinker said that he would like to see all EMF suits put on hold until the Supreme Court decides these test cases.

The *Covalt* ruling was a major factor in the dismissal of the long-running Slater School case, *Hurd et al. v. PG&E*, according to plaintiffs' attorney Joseph Davis of Davis & Winston in Los Angeles. Davis said that the decision was not due to *Covalt* alone, but also to a PG&E threat to hold his clients responsible for the utility's court costs if the lawsuit failed. Plaintiffs agreed to an April 7 dismissal of all charges.

"They couldn't take the fear that they'd be hit with over \$100,000 in costs," Davis told *Microwave News*, saying that this had a "chilling effect" on his clients. He expressed hope that *Covalt* would be overturned on appeal but said his clients could not afford the risk, imposed by the state's "loser pays" litigation rule. The case involved 33 teachers, staff, students and neighbors of the Slater School, over half of whom had contracted cancer (see *MWN*, N/D92 and J/F94).

## **Employers Win in Three EMF Workers' Compensation Claims**

Employers have won victories in three major workers' compensation cases that sought to link cancer with occupational exposure to EMFs. Two of the decisions appear to be final.

### **AT&T Wins Nebraska Brain Tumor Case**

Claims alleging that the fatal brain tumors of two Nebraska workers were caused by EMF exposures were dismissed on April 12. The widows of Donald Moran and Sam Toscano attributed their husbands' deaths in 1991 to environmental conditions at the Omaha production facility of AT&T Network Systems. Both men worked in the plant's Building 30.

Since 1989, eight other workers in Building 30 have died of brain cancer, according to Mike O'Brien of Cannon, Goodman, O'Brien & Grant in Omaha, who represented Velma Moran and Erlene Toscano. O'Brien said that compensation claims were filed in five of these cases, and that he has been handling all of them. Author Paul Brodeur drew public attention to the deaths in his February 8 testimony before the Nebraska state legislature (see *MWN*, M/A95).

Moran had done electroplating in Building 30 since 1961, while Toscano had worked there as an electrician since 1959. O'Brien had argued that they were exposed to high levels of EMFs, and also to radiofrequency and microwave (RF/MW) and some ionizing radiation.

Dr. Elaine Panitz of Princeton, NJ, a consultant in occupational and environmental medicine, appeared as an expert witness for the plaintiffs. She testified that the brain cancer

mortality rate in Building 30 was 11 times higher than expected. But Workers' Compensation Court Judge Paul LeClair largely discounted her testimony, commenting in his decision that, "Dr. Panitz is not an epidemiologist."

Expert witnesses for AT&T included Dr. Philip Cole of the University of Alabama, Birmingham, on EMFs, Dr. Don Justesen of the VA Medical Center in Kansas City, MO, and Dr. Carl Sutton of Milwaukee's Medical College of Wisconsin on RF/MW radiation and Dr. Richard Monson of the Harvard School of Public Health in Boston on ionizing radiation.

Panitz cited Drs. David Savitz and Dana Loomis's recent study, which found a statistically significant relationship between EMF exposure and brain tumors. But Cole argued that the Savitz-Loomis study "cannot be interpreted as anything other than negative or, at most, weakly positive" for a link between EMFs and brain cancer (see p.11).

"The various studies received in evidence, at best, suggest a possible causal relationship," ruled Judge LeClair (his emphasis). "An award of compensation cannot be based on speculation and conjecture." He wrote that the plaintiffs had not shown "by a preponderance of the evidence" that on-the-job exposures had caused the workers' cancers.

"The scientific facts in the case clearly established that there was no link between the illnesses of our two former employees and their jobs at the plant," said John Heindel, an AT&T executive, in a statement to plant employees. AT&T's attorney, Paul Prentiss of the Omaha firm of Timmermier, Gross & Burns, told *Microwave News* that the brain cancer rate in Building 30 was no higher than is found in the general population.

Prentiss and O'Brien each said that the deadline for appeal of the Moran and Toscano cases had passed. Prentiss said the other five cases would be withdrawn because both sides have agreed on a settlement. "I've got the checks right here on my desk," he added. "We're just working on getting the plaintiffs' signatures and processing the papers." O'Brien said, "All I can say is that we've made certain agreements, that we have resolved to resolve the case."

Velma Moran said in an interview that she had expressed her desire for an appeal, and that she had not yet signed any papers agreeing to a settlement. O'Brien responded that all of his clients had agreed, before the deadline, to seek a settlement with AT&T.

Neither attorney would comment on their agreement. However, *Microwave News* has learned that AT&T had offered the seven plaintiffs a settlement of \$500,000, but in March reduced this to \$140,000. After Judge LeClair's decision, AT&T cut its offer to \$55,000 for all seven together, most of which would go towards expert witness fees and legal expenses.

### ***Pilisuk Leukemia Suit Rejected***

On May 4, a jury in Seattle voted 10-2 against a suit involving Robert Pilisuk, a Seattle City Light employee with acute lymphocytic leukemia (ALL) who died in 1989. The jury found that the Washington Board of Industrial Insurance Appeals acted properly last year in rejecting a pension claim by his widow, Mimi Handlin Pilisuk. Her lawyer, Michael Withey of the Seattle firm of Schroeter, Goldmark & Bender,

told *Microwave News* that he would not appeal.

Last September, the appeals board had supported (2-1) the April 1994 opinion of Industrial Appeals Judge Linda Williams, who had written, "While the theory that EMF promotes or co-promotes leukemia is plausible, it is not probable."

The verdict of the King County Superior Court jury was the fourth defeat in a row for the Pilisuk claim (see *MWN*, M/A91, M/J92, J/F94 and S/O94). No new evidence was allowed, as the jury could only consider whether the appeals board acted properly given the evidence before it. Attorneys for both sides hired actors to read from hearing transcripts. "It helped keep the jury awake," said Seattle Assistant City Attorney Betty Ngan. She said that Williams had allowed both sides to present scientific evidence in extensive detail.

"Unfortunately, the jury felt that the issue of biological plausibility had been established only as possible, not probable," said Withey, "though they did seem impressed by the epidemiological studies."

Pilisuk was employed by Seattle City Light as a cable splicer/electrician from 1982 until his death from pneumonia brought on by his ALL. Withey presented evidence that Pilisuk's average EMF exposure on the job was 12.6 mG.

### ***Kaiser Wins Round in Brewer Lymphoma Case***

The first ruling in the U.S. to find that EMFs cause cancer has been reversed. Like the original ruling, however, the significance of the decision is mostly procedural. A full hearing on the merits of the case—a workers' compensation claim against Kaiser Aluminum & Chemical Corp. in Washington state—will probably come within six months, according to the plaintiff's lawyer, Lance Palmer.

The case was filed by James Brewer, who worked in the "potroom" at Kaiser's aluminum smelting plant in Tacoma from 1969 until 1986. Brewer was diagnosed with non-Hodgkin's lymphoma in November 1991.

The state accepted Brewer's claim on June 29, 1994, based only on the evidence submitted by his attorney (see *MWN*, J/A94). The claim had been filed almost a year and a half earlier, and Kaiser had twice failed to respond to queries from the Department of Labor and Industries.

The acceptance of the claim attracted considerable attention, and the department was quick to downplay its significance. "We're not making a scientific judgment on the linkage of EMF and cancer," Director Mark Brown said last year. "Under law, workers are entitled to sure and speedy relief. I'm not sure we've made the right decision here on the 'sure' side of the equation." Kaiser asked that the ruling be reversed, and the department granted its request on February 23, 1995.

Palmer, of the Seattle firm of Levinson, Friedman, Vhugen, Duggan & Bland, said that he was "disappointed but not surprised" by the reversal. He said that the department gave no explanation of the reasons for its reversal, and that he is taking the case to the Board of Industrial Insurance Appeals.

Seven of Brewer's coworkers in the potroom developed cancer and died. Studies of the plant's workers have found elevated rates of lymphoma and leukemia, as well as immune system abnormalities (see *MWN*, J/A90 and J/F93).

## « Cellular Phone Notes »

At a time when a number of federal officials are expressing frustration at the slow pace of CTIA's health research program, the congressional **Office of Technology Assessment (OTA)** in Washington has given CTIA's Wireless Technology Research group (previously known as the SAG) a vote of confidence. In a draft of a forthcoming report on *Wireless Technologies and the National Information Infrastructure*, OTA analysts hold that, "The SAG and its research process appear to meet the criteria for unbiased and open scientific research," and that, "Questions have been raised about the potential bias of [research sponsored by the cellular telephone industry], but these concerns appear to have been adequately addressed." The OTA allows that, "There is currently not enough scientific information available to finally determine one way or another whether there are long-term adverse health effects of wireless communications devices, or what they might be." But it advises, nonetheless, that, "Although research is still sparse, at present there appears to be little cause for concern that hand-held cellular telephones cause adverse health effects, such as cancer." The OTA offers little to support this position, except that, "Cellular telephones...put out little power

and skin proves to be a fairly effective shield for much of the radiation a typical cellular phone puts out." On hearing this, one federal staffer could not contain his amazement. "Where did they get that?" asked the official, who requested anonymity. "It is not scientifically credible." (See, for instance, *MWN*, J/F94 and J/F95.) The OTA also tries to put to rest the possibility of a brain tumor risk by citing a 1993 letter from Dr. Kristian Storm of the University of Wisconsin, Madison, who argued that the rate of brain cancer "has not changed significantly over the last decade." Storm's view—which he also detailed in an affidavit on behalf of NEC in the Reynard brain tumor case and which Judge Ralph Nimmons Jr. cited in his order dismissing the suit (see p.10)—is at odds with statistics published earlier this year by the National Cancer Institute (NCI). Writing in the February 1, 1995, issue of the *Journal of the NCI*, Dr. Susan Devesa and her NCI coworkers report that the incidence rate of brain cancer has shown a "sizeable" increase. When asked about this apparent conflict, Todd LaPorte, an OTA analyst who is working on the report with David Wye, the project director, said that he was unaware of the NCI data. LaPorte stressed that health impacts are not the main thrust of the report and that the April 4 draft obtained by *Microwave News* did not have the "benefits of reviewer comments." Interestingly, the OTA was remarkably prescient about the outcome of the Reynard case. Six weeks before Judge Nimmons handed down his decision, the OTA announced that the case had been dismissed "for lack of evidence." LaPorte predicted that the final report would be published at the end of June.

### WTR Blacklists Microwave News

Wireless Technology Research (WTR), CTIA's research group, has blacklisted *Microwave News*. Mike Volpe, WTR's spokesperson, said that he will no longer provide this newsletter with press releases, reports or any other documents.

Volpe explained that he made the move after Dr. Louis Slesin, *Microwave News*' editor and publisher, refused to provide WTR with advance copies of the newsletter. In addition, Volpe complained that other issues of the publication had arrived late. He said he suspected that this was the result of political bias.

"If you guys play ball with us and send us the information in an expedited manner, then I'll send you documents," Volpe told *Microwave News*. "Until that's resolved, I'm not going to send them to you." Volpe professed indifference to the outcome, saying, "More people read the *Wall Street Journal* and the *New York Times* than *Microwave News*, so if we skip you guys it's no skin off my back."

WTR Chairman Dr. George Carlo did not respond when asked whether he agreed with Volpe's actions.

"In 15 years of publication, we have never had a request to provide advance copies and we are not going to start now," Slesin said. He added that all subscribers' copies are sent out at the same time by a mailing house and that, "The suspicion that the mailing house has been asked to delay the copies of a particular subscriber is false, petty and ridiculous."

"The real question is this," said Slesin. "What is a research organization doing with an enemies list?"

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In his coverage of the dismissal of the **Reynard** brain tumor case (see p.10) on May 20, the *Washington Post*'s John Schwartz makes the following statement towards the top of the story: "But researchers who have studied possible connections between cancer and exposure to radiowaves of the frequencies used by cellular telephones have found no statistical correlation between the two." The statement is unattributed.

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A group of **Boonton, NJ**, residents may have prevailed, at least temporarily, against the siting of nine cellular telephone antennas in their community, but, in the process, they took a drubbing from the local press. The anti-antenna residents objected to **Bell Atlantic Mobile's (BAM)** application to build the towers on a nearby apartment building, in spite of tests done by the company, which, according to BAM spokesperson Robin Nicol, showed that the microwave exposures would be far below the New Jersey standard. The standard is based on the 1982 ANSI guidelines (see *MWN*, Ap84 and J/F94). The tests also showed no measurable radiation levels at a distance of 75 feet, Nicol said. After eight months of hearings, the zoning board rejected BAM's application by a vote of 4-2, with the majority arguing that the public anxiety was disruptive, according to the Morristown, NJ, *Daily Record*. Four days after the vote, on May 1, the *Daily Record* ran an edito-

## HIGHLIGHTS

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rial, "Victory for Voodoo," that declared, "Witch doctors have taken over Boonton," and asked, "Is New Jersey next?" The editorial described the anti-antenna group as "ignorant agitators" and suggested that "...the episode reflects a deeper modern problem—a problem not far removed from the puzzle of the Oklahoma bombing; what can we do to counteract the sort of sweeping public superstitions that frighten people into thinking radio antennas kill you and the federal government is a Soviet/UN conspiracy?" It did not take long for some Boonton residents to respond. In a letter published on May 5, Marlene Middleton asked that the editors apologize for their attempt "to exploit the horrific [Oklahoma] tragedy to make some bizarre, confusing and irrelevant point." She pointed out that the people of Boonton have become "highly educated in the field of cellular radiation" after listening to hours of testimony on both sides of the issue. "I suggest you take the time to read the transcripts and educate yourself," Middleton wrote. Another resident, Bonnie Lobb, suggested in a May 10 letter that BAM build its antennas on top of the *Daily Record* building. "I seem to recall that there aren't any churches, residences or schools anywhere near you! See if your employees will appreciate it." (The editors had already stated in response to an earlier letter that the paper would be glad to lease its roof for cellular antennas.) The war of words is not likely to stop soon. Nicol told *Microwave News* that the company plans to appeal the board's vote.

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CTIA's research arm has changed its name again. First known as the Scientific Advisory Group (SAG) on Cellular Phone Safety and then as the SAG on Wireless Technology (see *MWN*, J/F95), it is now the **Wireless Technology Research (WTR) Limited Liability Co.** WTR's Dr. George Carlo said that the latest change is a result of a recommendation from the General Accounting Office in its report on cellular phone health research (see *MWN*, N/D94). The new name also reflects a change in legal status, and comes a month after Carlo was sued by Debbra Wright for conspiring to deceive the public about the health risks posed by cellular phones (see *MWN*, M/A95).

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A cellular phone was a lifesaver—at least for a short time—according to a May 18 *Associated Press* report. On May 15, minutes before **Darrell Gene Devier**, a Georgia man convicted of rape and murder, was scheduled to be executed, a storm left the state prison near Jackson without power and telephone service. Unable to be contacted in the event that Devier had been granted a reprieve, Georgia Attorney General **Michael Bowers** left the prison with his cellular phone and drove until he received a clear dial tone. And when he did, he got word from the U.S. Supreme Court that the death sentence had been stayed. (A state corrections official told reporters that the execution would have been delayed as long as the prison was out of contact with the outside world.) The suspension did not last long, however, as later that week the Supreme Court lifted the stay and Devier was executed.

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## U.S. Cellular Phones Found To Cause Pacemaker Interference

Separate studies at Mt. Sinai Medical Center in Miami Beach, FL, and at the Mayo Clinic in Rochester, MN, have found that American digital cellular phones can cause implanted cardiac pacemakers to change their pulse rate or stop functioning altogether. In all cases, the pacemakers returned to normal operation once the cellular phones were removed.

The Food and Drug Administration (FDA) said that the new studies agree with results to date from its own ongoing research. Last year similar types of electromagnetic interference (EMI) were reported by Swiss and Italian researchers (see *MWN*, J/A94).

The research group of the Cellular Telecommunications Industry Association (CTIA), Wireless Technology Research (WTR; see above), released a statement that such studies had "generated valid questions about wireless technology" and announced that it was about to proceed with a larger-scale investigation.

"When [the European studies] first came out, people said the effects weren't important because the studies weren't done with American technology," observed Dr. Roger Carrillo, the director of the Mt. Sinai study. "Well, now we've shown effects with American technology." U.S. hand-held digital cellular phones operate at 0.6W peak power, compared to a peak power of up to 2W in European phones.

"If a patient asked me if it was okay to use a cellular phone, I'd have to say I don't know," said the Mayo Clinic's Dr. David

Hayes. "Because we can't answer the question, I'd be particularly cautious with patients who are completely pacemaker-dependent." At the same time, Hayes said, it is important not to overstate the problem. Hayes and Carrillo presented their results on May 3 at the *16th Annual Scientific Sessions of the North American Society of Pacing and Electrophysiology (NASPE)* in Boston.

Almost all cases of interference occurred with phones held over the chest, close to the implanted devices. "I can imagine a potential problem," said Carrillo, "if the telephone rings while it's in a pocket near the pulse generator." With a phone held against a patient's ear, Hayes only rarely found interference, and Carrillo found none at all.

Digital phones have been considered more likely to cause pacemaker EMI, since their pulsed transmissions can be interpreted by the pacemaker as a heartbeat. Hayes saw no interference from analog phones, and recommends that a pacemaker user who wants a cellular phone choose one with this older technology. While digital models constitute a small percentage of cellular phones in the U.S. today, they are expected to become dominant within a few years.

Carrillo also found that analog models caused no effects on pacemakers implanted in patients, but observed minor interference from analog phones in laboratory tests of the devices alone. He said in an interview that for now he is telling patients to keep all cellular phone antennas away from their



## ***Pacemakers & Security Systems***

Antitheft devices used in retail stores can cause EMI with implantable cardiac pacemakers, according to a recent study by a pacemaker manufacturer. More modern antitheft units caused less interference, and all pacemakers returned to normal afterwards.

Eric Lucas, Delos Johnson and Bryant McElroy of Pacesetter Inc. in Germantown, TN, tested five models of pacemakers attached to a heart simulator—not implanted in patients—with six types of electronic article surveillance (EAS) systems. The EAS devices included UHF, RF, magnetic and acoustomagnetic units, all of which transmit a pulsed signal.

“High-frequency and lower-power EAS systems, i.e., newer technology, produced fewer and less pronounced effects than older low-frequency and high-power EAS systems,” according to the November 1994 issue of *PACE* (17, pp. 2021-2026). The UHF EAS device caused no interference at all.

Metal detectors such as those used in airports and courthouses operate differently from EAS systems. While cases of minor interference have been reported, a study of 103 pacemaker users found no interference of any kind (*PACE*, 11, pp.1386-1387, 1988).

pacemakers. For his part, Hayes told *Microwave News* that, “My gut feeling is that analog phones are safe,” but that until more testing is done, patients might want to follow this precaution.

Five days before the NASPE conference, WTR issued a press release stating that it had completed a research protocol for its own study of EMI with pacemakers. “This study will help provide a basis to determine whether there is a public health risk from interference between pacemakers and wireless hand-held telephones, and the extent of the risk, if one is identified,” explained WTR Chairman Dr. George Carlo.

Besides this patient testing funded by WTR, laboratory testing of pacemakers and cellular phones is being planned at the University of Oklahoma’s industry-funded Center for the Study of Wireless Electromagnetic Compatibility in Norman (see *MWN*, J/A94). “The protocols for the clinical epidemiology study and the University of Oklahoma work have been jointly developed to complement each other,” according to Carlo’s statement.

Hayes and Carrillo are both serving on a 14-member committee, chaired by Carlo, which advised WTR on its protocol during nine months of discussions. Both researchers will take part in this larger patient study funded by WTR, along with Dr. Hans Moore of George Washington University Medical Center in Washington. Asked when the WTR experiments would begin, Carrillo told *Microwave News*, “You’d have to ask them.” He noted that, “We have been working with WTR on this protocol since October, and it seems that every time we get closer and closer, it still doesn’t move forward.”

WTR spokesperson Mike Volpe responded that as far as

WTR is concerned, its study is already under way, since the work of Carrillo and Hayes had played an important role in shaping the WTR protocol. Volpe said in an interview that the only steps remaining before WTR funds can be released for the new experiments are an internal budgetary review and the working out of contract language between WTR lawyers and the participating institutions.

Carrillo highlighted the importance of developing government standards “to be sure that new pacemaker units are well shielded against this kind of interference. Microwave ovens were once a problem for pacemaker patients, but are not today. In the same way, I think in 20 years this will be a piece of history.”

In a May 3 statement, the FDA said that Carrillo’s and Hayes’s results are in line with the agency’s laboratory testing so far: “Based on these preliminary findings, cellular phones do not seem to pose a significant health problem for pacemaker wearers. Still, people with pacemakers may want to take some simple precautions to be sure that their cellular phones don’t cause a problem”—for example, by not carrying the phone in a shirt or jacket pocket. The FDA is conducting lab tests on a wide range of pacemakers, including older models no longer on the market. It will carry out a similar examination of implanted defibrillators, but does not plan any patient studies.

Medtronic Inc., of Minneapolis, the manufacturer of half of all pacemakers worldwide, said that laboratory testing of its own devices with a variety of cellular phones “indicated that there may be some temporary effects only in very close proximity to the implant.” Since March of this year, the company has recommended that patients with implanted pacemakers follow these precautions when using a cellular phone: keep the phone at least six inches away from the implanted unit at all times; hold the phone against the ear farther from the implant; and do not carry the phone in a pocket or on a belt adjacent to the pacemaker. Medtronic spokesperson Dick Reid said that a total of 132,000 pacemakers were sold in the U.S. in 1994.

Carrillo said his interest in the issue began two and a half years ago, when a pacemaker user asked him whether it was safe to use a cellular phone. He could find no studies on the question and became interested in doing one himself. In Carrillo’s experiments, ten different models of cellular phones were used by 59 volunteers with implanted pacemakers, none of whom were completely pacemaker-dependent. He found EMI with 19 different pacemaker models in 21 volunteers.

Hayes worked with 30 volunteers and noted interference with 16 of their pacemakers. His study used four different types of cellular phones, three hand-held models and one portable that transmits at a higher power of 3W. Hayes told *Microwave News* that the portable caused substantially more interference than the hand-helds.

Meanwhile the June 1995 issue of *PACE (Pacing and Clinical Electrophysiology*, 18, pp.1218-1224), NASPE’s official journal, contains the first published paper from the European research efforts announced last year. Dr. Vincenzo Barbaro and a team at the Istituto Superiore di Sanità in Rome, Italy, studied the effects of European GSM digital phones on pacemakers in 101 patients, and found EMI in 26 of them.

### **Brain Tumor—Cell Phone Suit Dismissed; Review Requested**

The first lawsuit alleging that cellular telephone use can cause or promote brain cancer has been dismissed. But the attorney for David Reynard, whose wife died of brain cancer in 1992, is asking the judge to reconsider.

John Lloyd, Reynard's St. Petersburg, FL, attorney, said he served papers on June 1 asking U.S. District Court Judge Ralph Nimmons Jr. to reconsider his May 17 decision. Lloyd said he was unable to submit all of his testimony in time because the court had not set a date for filing opposing affidavits, a procedural violation that, he said, should be grounds for reversing the dismissal.

At least seven other suits are still pending nationwide in which plaintiffs are seeking to link cellular phones with brain cancer.

"We're obviously disappointed and surprised. We had no idea this was going to happen," Reynard told *Microwave News*. "It seems it was just a slap in the face more than a real legal decision."

Nimmons dismissed Reynard's suit against Melville, NY-based NEC America Inc. and GTE Mobilnet of Tampa (FL) Inc. on the grounds that Reynard had not provided admissible evidence on medical causation. Nimmons cited the landmark U.S. Supreme Court decision, *Daubert v. Merrell Dow Pharmaceuticals Inc.*, which allows the trial court to determine the admissibility of expert testimony.

Dr. John Holt of the Microwave Therapy Center in Perth, Australia, and Dr. David Perlmutter, a neurologist in Naples, FL, provided testimony for Reynard. Expert testimony for the defense came from Dr. Kristian Storm of the University of Wisconsin, Madison, and Dr. Carl Sutton of the Medical College of Wisconsin in Milwaukee.

Nimmons devoted much of his opinion to explaining why he found Perlmutter's affidavit to be inadmissible: "[It] contains no reference to any scientific or medical research by Dr. Perlmutter independent of this litigation or any indication that he examined Susan Reynard or reviewed her medical records." Further, "...the conclusions of the affidavit are not supported by any objective source, such as a treatise or a published article in a reputable scientific journal."

Thomas Wheeler, president of the Washington-based CTIA, applauded the dismissal: "The court threw out the suit on the very specific grounds that it represented junk science."

Perlmutter, however, told *Microwave News* that "the reference to 'junk science' is simply a ploy. That's their interpretation of the research, but in fact it really is good science."

NEC America Senior Vice President James Carpenter said he welcomed the dismissal "as a verification of our position that cellular phones are safe." He added that, "Public safety is paramount to NEC."

Robert Holstein, whose Chicago-based firm, Holstein, Mack & Klein, represents six of the plaintiffs currently seeking to link cellular telephones with brain cancer, did not return telephone calls asking for comment. Trial dates for these cases have not yet been set, according to an attorney at the firm.

Reynard's suit, which was originally filed on April 8, 1992, alleges that his wife Susan Reynard's portable cellular telephone either initiated her brain tumor or accelerated the progress of an already existing tumor (see *MWN*, M/J92 and J/F93). Susan Reynard died in May 1992, two years after she was first diagnosed with cancer. She had used an NEC P9000 hand-held cellular phone for two years prior to her diagnosis, according to her husband.

### **CTIA Research Group Funds \$1.5 Million Dosimetry Study**

After 18 months of negotiations, Dr. C.K. Chou of the City of Hope National Medical Center in Duarte, CA, has received \$1.5 million from the CTIA's Wireless Technology Research (WTR) Limited Liability Co. for a three-year study of human exposures to microwave radiation from cellular phones.

This is the largest grant that WTR (formerly known as the SAG—see p.8) has awarded to date as part of its \$15-25 million research program, and it is the first for work that does not involve epidemiology. The first phase of Chou's project will be to design a head-only exposure system—to simulate the use of cellular phones—for use in animal experiments.

WTR has also signed two other, related contracts. Dr. Gregory Lapin of ComBioMed Labs in Deerfield, IL, has received \$64,000 to develop computer models of experimental animals to help Chou design exposure systems. And Dr. Allen Taflove of Northwestern University in Evanston, IL, has received \$28,000 to analyze proposed exposure systems for *in vitro* studies in order to protect against generating "hot spots" which could cause heating in tissue cultures.

Dr. George Carlo, the chairman of WTR, first announced Chou's award in December 1993 (see *MWN*, J/F94), but it was delayed by negotiations over the ownership of the research equipment and results, and by Carlo's insistence that Chou use good laboratory practices (GLPs). In an interview, both Chou and Carlo's spokesperson Mike Volpe played down any past differences. "We have been waiting a long time and now we are looking forward to a successful project," Chou said. Volpe refused to comment on the sticking points in the contract negotiations.

With the WTR funds, Chou will purchase a super-computer—he calls it a "baby Cray"—to carry out complex dosimetry calculations. At the conclusion of the study, WTR will donate the computer to the medical center.

When Carlo originally announced Chou's award, he also said that he would contract with Dr. Om Gandhi of the University of Utah, Salt Lake City, for additional dosimetry studies. No agreement has yet been reached, however. "I am very disappointed." Gandhi told *Microwave News*, "We were talking about such a small amount of money—less than \$100,000." Gandhi said that he had submitted a number of proposals and revisions over the last 18 months. "There has been a lot of paperwork," he said. Neither Carlo nor Volpe

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responded to queries on the status of the Gandhi contract.

In the second year of the project, once the exposure system is completed, Chou will develop computer and human models (from the navel up) to estimate the amount of microwave energy absorbed by a cellular phone user. In the third year, Chou will conduct MRI scans on human subjects and apply the data to refining his models.

Chou, the director of radiation research at the City of Hope center, was the associate director of the University of Washington's Bioelectromagnetics Research Lab in Seattle before moving to California ten years ago. At that time, the lab was run by Dr. Bill Guy, who, along with Carlo and Dr. Ian Munro of CanTox in Mississauga, Canada, run the three-member WTR. Chou worked with Guy on microwave dosimetry and the health effects of long-term microwave exposures. At the City of Hope, Chou has focused on the distribution of energy from hyperthermia applicators.

Dr. Susan Putnam of the Harvard Center for Risk Analysis in Boston said that WTR had not asked the center's advisory committee on cellular phones to review any of the three funded projects.

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## **Communications Industry Seeks Ways To Facilitate Tower Siting**

The communications industry is stepping up its efforts to expedite the expansion of the country's cellular phone and personal communications services (PCS) networks. Trade associations representing the wireless industry have turned to President Clinton and the Congress for assistance, in addition to petitioning the Federal Communications Commission (FCC).

In a March 22 letter, Thomas Wheeler, president and CEO of the CTIA in Washington, asked the President to issue an executive order directing federal agencies to facilitate the use of property that they control. "Too often the process of building transmission sites is thwarted or substantially delayed by federal agencies which control the sites on which antennas need to be located," Wheeler wrote. He suggested using the rooftops of General Services Administration buildings and public lands managed by the Park and Forest Services.

As of late May, the White House had not formally responded, according to CTIA spokesperson Mike Houghton. But, "There have been conversations," he told *Microwave News*.

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## **FROM THE FIELD**

### **Clippings from All Over**

This is a large and well-done study. Its results can be relied upon.... The study is overinterpreted with regard to the EMF-CNS [central nervous system] cancer relationship. Until this relationship can be shown to hold, in a dose-response fashion,... the study cannot be interpreted as anything other than negative or, at most, weakly positive for the EMF-CNS cancer association.... The present study is categorically negative for virtually all forms of cancer. When seen in this light and when its high quality is taken into account the study gives us a transcendental perspective: As studies of occupationally exposed persons have increased in size and quality, the EMF-cancer link has become ever weaker and less consistent. A true cause-effect relationship would have moved the other way, becoming ever stronger. Indeed, in the last two years three large-scale, well-done studies of men occupationally exposed to EMF have been published. None of these studies presents impressive evidence for a cause-effect relationship between EMF and any form of cancer. And, no two of the studies even show an overall association for any one form of cancer. Thus, in broadest perspective, the present study is reasonably persuasive as to the absence of an EMF-cancer relationship.

—Dr. Philip Cole, *Evaluation of "Magnetic Field Exposure in Relation to Leukemia and Brain Cancer Mortality Among Electric Utility Workers"* by David Savitz and Dana Loomis, January 20, 1995

One key issue complicating the investigation of exposure to EMFs is the question of how to measure them. Not only is there imprecision in the technology currently used to assess EMFs in the field, there is also disagreement over what constitutes exposure and what elements the exposure monitors should be measuring. EMF is a very broad category, and scientists contend that any effects seen in epidemiologic or laboratory studies may depend on what elements of electric and/or magnetic fields (e.g., wavelength or frequency, intensity of the field, degree of polarization, whether the field is continuous, intermittent, or transient) are being measured, and what exposure parameters (such

as time-weighted average, peak field levels, or lifetime exposure) are being investigated. Each element may play a role in the potential impact of EMFs, yet there is little consensus on what parameters we should be capturing. In other words, scientists agree that how EMFs are measured may matter a lot, but they do not yet know which exposure measures, if any, are physiologically meaningful.

—“Workers, EMFs and Cancer,” *Risk in Perspective*, a publication of the Harvard Center for Risk Analysis, p.6, April 1995

Some members of such groups [e.g., Arizona Patriots] contend that the United Nations plans to conquer the United States, using a secret strike force made up of the National Guard and foreign troops and hiring Los Angeles street gangs to confiscate the guns of private citizens. Some think that United States currency is imprinted with secret bar codes so that government officials in vans equipped with microwave scanners can drive by their homes and count their money. Others fear that the United States is run by a secret organization.

—Tim Weiner, “FBI Hunts 2d Bombing Suspect and Seeks Links to Far Right; Rain Stalls Search of Rubble,” *New York Times*, p.32, April 23, 1995

EPRI plans to compare the methodologies and results of the three studies [Sahl, Savitz and Thériault] to investigate the reasons for differences in the results and also plans to pursue other comparative analyses. The studies' focus on utility workers and their use of state-of-the-art exposure assessment are thought to offer a unique opportunity to better understand both exposure environments and potential risks in the industry. Explains [EPRI's Leeka] Kheifets: “We are planning to bring all the researchers together and have them examine their data in more detail so that, we hope, a clearer picture will emerge and we will know where to go from there.”

—“Utility Workers and EMF Health Risks,” *EPRI Journal*, p.17, March/April 1995

## HIGHLIGHTS

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Meanwhile, Reps. Scott Klug (R-WI) and Tom Manton (D-NY), working with the Personal Communications Industry Association (PCIA), also based in Washington, have proposed amending the Communications Act to prohibit state and local governments from adopting RF/MW radiation safety rules that are more stringent than those previously adopted by the FCC.

The amendment, if enacted, would also force the FCC to complete its rules on RF/MW safety within six months. The commission has proposed adopting the 1992 American National Standards Institute limits (see *MWN*, M/A93), but final rules may now be delayed by the Environmental Protection Agency's (EPA) forthcoming draft RF/MW exposure guidelines (see p.15).

"It would be hard for the FCC to ignore what the EPA recommends," said Dr. Robert Cleveland of FCC's Office of Engineering and Technology. He explained that two former FCC chairmen have written to the EPA saying that the commission would defer to the agency regarding RF/MW safety guidelines. "Most likely," Cleveland added, "the FCC will incorporate the EPA recommendations in another proposal for comment later this year."

On May 17, the House Telecommunications and Finance Subcommittee passed the Klug-Manton amendment. The House Commerce Committee then passed the communications bill, including the amendment, on May 25. The bill will next be considered by the full House and then by the Senate.

The rewrite of the Communications Act is a complex and controversial piece of legislation—of which the cellular and

PCS provisions are only a small part—and most observers do not expect it to emerge from Congress any time soon.

Last December, the FCC received petitions from the CTIA and from the Electromagnetic Energy Association for, respectively, federal preemption of state and local regulations on tower siting and a national RF/MW safety standard (see *MWN*, J/F95). The petitions have prompted a large number of comments, both for and against (see below).

In an April 18 letter to the mayor of Stanton, CA, who had argued against CTIA's petition, FCC Commissioner Rachelle Chong indicated how she is approaching her decision: "I believe that the commission must balance the federal interest in ensuring the development of a competitive, efficient mobile services infrastructure against legitimate interests of local governments in regulating zoning and land use matters."

The FCC has yet to rule on CTIA's petition. "We are looking at it and in the next couple of months something will certainly be moving," Jeff Steinberg, a senior attorney in FCC's wireless bureau, told *Microwave News*. In 1985, the FCC declined a similar request for federal preemption (see *MWN*, Ap85).

The Congressional Office of Technology Assessment is preparing a report, *Wireless Technologies and the National Information Infrastructure*, which addresses the tower siting issue (see also p.7). The cellular and PCS industries estimate that 100,000 antennas will have to be built over the next decade in order to expand the country's wireless network, according to a chapter entitled "Zoning Regulations and Antenna Siting: Local Control and Federal Preemption."

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### **Battle Lines Drawn on CTIA Petition Seeking Federal Preemption of State and Local Cellular Phone and PCS Tower Rules**

*Excerpted below are comments submitted to the FCC in response to the petition filed by the CTIA on December 22, 1994. Comments were due by February 17 and reply comments by March 6 (see MWN, J/F95). Reply comments are marked with a "‡". Note that CMRS stands for Commercial Mobile Radio Service.*

...The FCC, a federal agency, has no constitutional or legal or legislative right to challenge state and local regulatory procedures in this or any matter.

—Bert Dumpé, Ergotec Association Inc., Arlington, VA, February 13

The Aircraft Owners and Pilots Association (AOPA)...strongly objects to the [CTIA] petition....AOPA suggests that CTIA has not demonstrated any legal authority for such FCC preemption....This petition is at odds with the established and federally recognized responsibility of state and local governments concerning tall towers.

—Aircraft Owners and Pilots Association, Frederick, MD, February 15

This extraordinary proposal has no legal justification and would be contrary to the public interest....[S]tate regulation of siting does not conflict or impede the development of the telecommunication infrastructure; rather, state siting regulation serves the important purpose of ensuring that such development is consistent with other public interests of protecting the environment and residents. These important policy goals should not be lightly tossed aside in a rush to build the information superhighway.

—Connecticut Attorney General Richard Blumenthal and the Connecticut Siting Council, February 16

The [FCC] should deny the petition because it strikes at the heart of the power of municipalities and states to develop zoning rules that will protect the environment and public health. As a matter of policy, state and local governments should not be restrained in exercising their authority to issue and enforce zoning regulations that protect aesthetic, health and economic interests and that promote the public interest.

—Natural Resources Defense Council, New York City, February 16

APC supports the petition....In its efforts to establish the hundreds of base station sites necessary to offer PCS in this region, APC is now facing serious local zoning obstacles...that confirm the imminent need for the relief sought by CTIA....The delays, unnecessary costs and outright bars to tower siting to which local governments have subjected APC will continue to hamper development of PCS infrastructure unless the commission exercises its authority to preempt the patchwork of local regulations....[A] new commission rule concerning preemption of zoning restrictions on CMRS infrastructure could recognize *legitimate* local interests in health, safety and aesthetic regulation, while also constraining such regulation on the basis of reasonableness principles.

—American Personal Communications (APC), Washington, February 17

McCaw agrees that there is a substantial and immediate need for commission action to preempt the growing patchwork of state and local cell-siting restrictions that are impeding the development of the national telecommunications infrastructure....McCaw has observed in

recent years an alarming increase in the number and variety of state and local regulatory constraints that have the purpose or effect of preventing or substantially hindering the installation of cell-site facilities essential to the provision of innovative, efficient and economical CMRS services....Frequently, such regulations are developed as a political response to the unfounded claims of a few vocal constituents who wrongly assert that the low-level [EM RF] emissions generated by cell sites pose a health risk to the community. Although these charges are firmly belied by exhaustive studies, expert testimony and the commission's own determination that cellular facilities operate far below the well-established federal limits for RF radiation, an increasing number of states and localities have established their own standards for RF regulation.

—**McCaw Cellular Communications Inc., Washington, February 17**

Matters of public health, welfare and safety are, for the most part, issues of local concern....[L]ocal government officials live and work in the communities which they serve and are, therefore, more knowledgeable about the health, welfare and safety issues affecting their communities.

—**National Association of Telecommunications Officers and Administrators, National Association of Counties, National League of Cities and U.S. Conference of Mayors, February 17**

Because increased local oversight over tower site construction and operations is adversely affecting a licensee's ability to engage in commission-authorized activities, federal supremacy in the form of preemption must now be asserted....[T]he commission must consider the economic hardship of complying with conflicting federal, state and local regulations—many communications operations will expend considerable resources trying to comply with such conflicting regulations. In most cases, the expense will be passed along to the consumer. In other cases, the expense will suffocate the business and cause a withdrawal of service to the public.

—**Personal Communications Industry Association (PCIA), Washington, February 17**

[P]reemption of state and local authority is neither warranted as a matter of fact nor of law....CTIA cites not a single local siting ordinance or regulation which has “physically delay[ed]” or “prevent[ed]” the siting and build-out of CMRS towers....[H]ad CTIA examined the facts, the facts would have demonstrated graphically that state and local entities have fostered, not hindered, the efficient development of infrastructure necessary to support wireless carriers....[I]n the vast majority of cases in which the site proposed by the carrier was deemed incompatible with health, safety, environmental or aesthetic concerns in the community, the local entity typically found an alternative site. For example, the CPUC is aware of cases where a cellular carrier has sought to place its towers in a school yard or on a public beach. In these cases, the local entity has properly considered whether such placement is consistent with local zoning laws, and has suggested placement elsewhere to accommodate the carrier.

—**California Public Utilities Commission (CPUC), March 3<sup>rd</sup>**

[T]his proposal does nothing to ease the problem of finding willing property owners to take on cellular site leases. Property owners will increasingly demand assurances that any cellular facility located on their property is safe for them, their tenants, employees, families and neighbors....

—**Cindy Sage, Sage Associates, Montecito, CA, March 4**

Bell Atlantic Mobile is cognizant of the legitimate right of state and local governments to control land use in their states and communities....[I]t does not support complete preemption of local control over CMRS tower siting. At the same time, however, the record shows that some localities are barring new CMRS towers altogether, are

imposing restrictions or waiting periods...or are assessing fees not charged other similar sites. It is this type of unreasonable and discriminatory interference with federally licensed communications services that not only justifies but compels federal preemption.

—**Bell Atlantic Mobile, Bedminster, NJ, March 6<sup>th</sup>**

...[T]he commission has been very careful, in its disclaimer, to establish that it is not a health agency and would prefer to defer to one when addressing biological/radiation issues. If the FCC were to adopt the CTIA petition, it would most certainly be in the position of [having to prove], beyond all doubt, that there is absolutely no possibility of harm from any FCC-authorized system to anyone in any environment. That is not just an unenviable position, it's impossible.

—**Kathleen Hawk, community activist, Butler, PA, March 6<sup>th</sup>**

Often the public has been forced to accept compromises in the provision of mobile services because of citizen groups that have used scare tactics based on unsubstantiated safety claims to prevent tower construction in areas where local zoning regulations should allow it.

—**New Par, a regional cellular service provider, March 6<sup>th</sup>**

The FCC should grant CTIA's petition and initiate a rulemaking proceeding to propose rules preempting local zoning regulations which interfere with a federal licensee's efforts to provide wireless service. The rulemaking should propose uniform national zoning guidelines for wireless communications facilities. These guidelines should strive to balance the needs of CMRS providers and local and federal regulators.

—**NYNEX Mobile Communications Co., White Plains, NY, March 6<sup>th</sup>**

The current system is working fine....Local governments' zoning allows towers and other facilities to be appropriately placed within communities. The current permitting system has checks and balances so that local community issues can be weighed and there is state oversight to ensure that the statewide goal of having reliable and widespread cellular service is met.

—**Mayor Algird Leiga, Claremont, CA, March 8**

*More than 40 other California cities filed similar letters with the FCC, including Anaheim, Indian Wells, San Bernardino and West Hollywood.*

Preemption of zoning ordinances could directly affect the “quality of life” in a community. Local planning authorities identify the needs and desires of residents based on a thorough knowledge of community conditions and resources. Plans are then developed with full citizen participation. Preemption of regulations to allow towers located at the provider's discretion would not serve the best interests of citizens or communities. Local governments are in the best position to balance the interests of the cellular telephone industry with surrounding areas.

—**American Planning Association, Chicago, March 17<sup>th</sup>**

...[S]uch generic preemption is clearly precluded by the legislative history underlying the recently amended §332 of the Communications Act....[S]uch preemption could potentially overwhelm the already hardworking but overburdened FCC staff....[E]ven [if] we assume, *arguendo*, that preemption is permissible and the FCC staff could handle the additional workload, the CTIA petition has failed to present any evidence that any relief is warranted.

—**National Association of Regulatory Utility Commissioners, Washington, March 17<sup>th</sup>**

[We] believe...[t]he FCC is not the appropriate federal agency to develop a federal [RF] standard [because] there has been no concerted effort by any federal agency to pursue such a standard. Given the uncertainty in the science, states should not be prevented from exercising their judgment as to the best approach to take.

—**New Jersey Department of Environmental Protection, March 17**

The preemption of state and local zoning siting regulations...would harm, not promote, the safety of life and property.

—**Communications Workers of America, Washington, April 10**

<b>Cancer Incidence<sup>§</sup> Among Polish Military Personnel Exposed to RF/MW Radiation (1971-1985)</b>								
<b>Age Groups</b>		<b>All Cancers</b>			<b>Leukemia and Lymphoma</b>			
Years	Exposed	Controls	Odds Ratio	C.I. <sup>◇</sup>	Exposed	Controls	Odds Ratio	C.I. <sup>◇</sup>
20-29	27.11	11.62	2.33*	1.23-3.12	17.30	2.12	8.16†	3.11-22.64
30-39	42.28	18.37	2.30*	1.04-3.06	26.43	3.08	8.58†	3.46-19.58
40-49	161.62	84.29	1.92*	0.98-2.84	73.25	8.32	8.80†	4.13-15.27
50-59	274.13	186.71	1.47	0.92-2.12	108.62	24.31	4.47†	2.56-6.81
All Age Groups	119.12	57.60	2.07*	1.12-3.58	43.12	6.83	6.31‡	3.12-14.31

§Average annual incidences per 100,000 subjects      ◇Confidence interval      \*p<0.05      †p<0.01      ‡p<0.001

These included seven cases of chronic myeloid leukemia among the exposed population as compared to 17 among the controls, a rate which is close to 14 times expected.

The rates of cancers of the brain, colon/rectum and esophagus/stomach were also significantly elevated among soldiers exposed to RF/MW radiation.

“Confirmation of our findings will require a larger group of exposed personnel, which can probably only be done in co-operation with other countries,” stated Szmigielski. Nevertheless, he concluded that there is an “urgent need” to investigate these high cancer rates further.

In his paper, Szmigielski explained that exposure information was collected from military safety groups, which measured RF/MW radiation intensities “at and around service posts where...emitting equipment is used, repaired or serviced.” Most of the sources emitted pulsed radiation in the 150 MHz-3.5 GHz frequency range. The surveys indicated that 80-85% of the exposures did not exceed 0.2 mW/cm<sup>2</sup>; the rest were exposed to 0.2-0.6 mW/cm<sup>2</sup>, and occasionally to more than 0.6 mW/cm<sup>2</sup>. These levels are well below those specified as safe by current safety standards. Szmigielski noted that the exposures were “considerably more uniform” than those found in electrical occupations.

In 1985, Szmigielski reported similar findings for military personnel exposed between 1971 and 1980 (see *MWN*, Mr85). The new analysis extends the database through 1985. That same year, he began working on a prospective epidemiological study of RF/MW-exposed soldiers; preliminary results also support a cancer risk (see *MWN*, J/F87 and S/O90). Szmigielski said that he will soon begin analyzing the prospective data collected through 1995.

No large-scale epidemiological cancer study of RF/MW-exposed workers has ever been done in the U.S. A 1992 investigation of U.S. Army artillery crews did find impaired reproductive function, but no attempt has been made to investigate this finding (see *MWN*, M/J93).

Szmigielski’s paper, which has been peer-reviewed, will be published in a special issue of *Science of the Total Environment* devoted to papers presented at a conference on *The Effect of RF Electromagnetic Radiation on Organisms*, held in Skrunda, Latvia, in June 1994 (see *MWN*, M/A94 and S/O94). Professor Guntin Brumelis of the University of Latvia in Riga, who is editing the special issue, told *Microwave News* that it

is “expected to be published in early 1996,” due to a backlog at the printer. The journal is published by Elsevier in Amsterdam, The Netherlands. For more information, contact Elsevier in the U.S. at (212) 633-3750, or Fax: (212) 633-3764.

**NCRP Review of Modulated RF/MW** (continued from p.1)

of the committee should be “basic dosimetry.” ORIA’s Norbert Hankin added that, “We wanted the NCRP to provide us with a framework to incorporate modulation into exposure limits, not new numerical guidelines.” The modulation study is one of EPA’s first initiatives in the agency’s revived non-ionizing radiation program (see *MWN*, S/O94).

But the chair of the panel, Dr. Om Gandhi of the University of Utah, Salt Lake City, said in an interview that, “We are going to look at biology.” He added that his committee will be reviewing “a database of least 600-700 papers” on modulation bioeffects. Other members of the panel noted that bioeffects had been on the agenda at the committee’s first meeting, held in Bethesda, MD, on April 28.

The move from dosimetry to biology is reflected in the change in the committee’s mission statement since the NCRP first submitted a proposal to the EPA last July under the title *Consideration of Modulation in the Development of Maximum Permissible Exposure Limits for RF Radiation*. NCRP Committee 89-4 is now working on a *Commentary on Biological Effects and Exposure Recommendations for Modulated Radiofrequency Fields* (see box at right).

Some observers, who asked not to be named, are concerned that the committee is not well suited to evaluate health studies because most of the members are engineers or physicists. “Where are the biologists?” asked one federal official.

Others are concerned about potential conflicts of interest, given that five of the seven committee members are now, or were recently, consultants to the communications industry. This could be a problem because, as Dr. Tom Tenforde, who played a major role in assembling Committee 89-4, pointed out, “Cellular phones are the main issue” when it comes to devising safety standards for modulated RF radiation. “There is a real need for guidance” with respect to the phones, he said. Tenforde, the chief scientist of the health division at the Battelle Pacific Northwest Labs in Richland, WA, is the chair of NCRP Committee 89 on Non-Ionizing Electromagnetic

## **Charge of NCRP Committee 89-4**

*NCRP Committee 89-4 will prepare a Commentary on Biological Effects and Exposure Recommendations for Modulated Radiofrequency Fields. The committee's charge is as follows:*

This NCRP commentary will address the fact that current standards for public and occupational RF fields do not account for potential differences in the biological responses and health effects of [continuous wave] versus modulated RF fields. There are laboratory findings which indicate that time-averaged specific absorption rate (SAR) is not an adequate dosimetric parameter or predictor of biological effects for modulated RF fields under conditions in which the interactions with tissue are non-thermal. The proposed committee activity will address the possible consequences of including the modulation of RF radiation as a factor in developing recommendations for human exposure limits. Aspects of modulated RF that will be considered include the RF carrier frequency, time-averaging, modulation characteristics (waveform, frequency, pulse width, repetition rate, etc.), selection of a biological basis for exposure limitations, etc. The results of this assessment will be a set of recommendations that incorporate modulation into permissible exposure limits for RF radiation.

Fields and a member of the NCRP board of directors.

In addition to Gandhi, the members of the panel are Drs. John D'Andrea of the Naval Aerospace Medical Research Institute's detachment at Brooks Air Force Base in San Antonio, TX; Kenneth Foster of the University of Pennsylvania, Philadelphia; Bill Guy, an emeritus professor at the University of Washington, Seattle; Don Justesen, recently retired from the VA Medical Center in Kansas City, MO; Indira Nair of Carnegie Mellon University in Pittsburgh; and Asher Sheppard, a consultant based in Redlands, CA.

Foster, Gandhi, Guy, Nair and Sheppard are engineers and/or physicists. Justesen is a psychologist and D'Andrea received his doctorate in physiological psychology.

Tenforde, who is a biophysicist, said that he has full confidence in the committee but conceded that its members have "more knowledge in the dosimetry domain than in biology." Dr. Thomas Koval, a senior staff scientist at the NCRP in Bethesda, also praised the expertise of Committee 89-4, saying it is an "excellent" group, and added that, "Although the background of the members is not principally in biology, they are people who have had a lot of experience with RF bioeffects."

Foster, Guy and Justesen have often represented communications companies. For instance, Justesen recently served as an expert witness for AT&T in the case of two workers who had died of a brain tumors (see p.5) and Guy is one of the three members of the WTR, which is sponsored by the CTIA (see p.8). Sheppard is a consultant to Motorola. Foster has consulted with cellular phone companies and Gandhi has done dosimetry work for McCaw Cellular Communications, now part of AT&T (see *MWN*, J/F94).

Tenforde maintained that there is no reason to be concerned about possible conflicts of interest. "I don't view it as a significant issue," he said. "It's more coincidental than anything else, because the best people are relatively few in number."

The EPA may not be the only sponsor of the committee's work, according to NCRP's Koval. He said that, if necessary, the council would supplement the EPA money with its own funds, which are collected from a large number of sources. For instance, the Motorola Foundation, an entity separate from the corporation, recently gave the NCRP an unrestricted \$225,000 grant, to be paid over three years.

The primary focus of the NCRP, which was chartered by the U.S. Congress, has been ionizing radiation, but it has a number of ongoing projects on non-ionizing radiation (see *MWN*, J/F86, M/J92 and M/A94).

## **EPA To Release Draft RF/MW Exposure Guidelines**

The EPA will soon circulate draft guidelines for public exposures to RF/MW radiation. The guidelines, which will be voluntary, are adapted from those recommended by the International Radiation Protection Association (IRPA) in 1988; they are somewhat more stringent than the 1992 limits adopted by the American National Standards Institute (ANSI).

"Our guidelines are intended to protect against shocks and burns and the effects of RF heating," explained Norbert Hankin of EPA's Office of Radiation and Indoor Air (ORIA) in Washington, who helped develop the draft proposal. "We did not address cancer and nonthermal effects." The EPA limits are keyed to a maximum whole-body specific absorption rate (SAR) of 0.08 W/Kg and a partial-body SAR of 1.6 W/Kg—in order to limit temperature increases to less than half a degree Celsius.

The two key differences between the EPA limits and prior guidelines are: (1) exposures are not averaged over the six-minute and 30-minute intervals specified by IRPA and ANSI, respectively; and (2) the partial-body exposure limit applies to all parts of the body. The ANSI guidelines specify a more lenient limit—4 W/Kg—for the hands, wrists, feet and ankles.

Dennis O'Connor, EPA's EMF team leader, told *Microwave News* that he plans to seek comments from all interested parties when a review by an interagency working group is completed. "Our intention is to move as quickly as possible without sacrificing the review process," he said.

Meanwhile, the International Commission on Non-Ionizing Radiation Protection (ICNIRP), IRPA's successor, has drafted a revision of its 1988 guidelines which will be discussed at ICNIRP's annual meeting, to be held at the Food and Drug Administration (FDA) in Rockville, MD, in June. "I don't anticipate any major changes though there will be some clarifications," said FDA's Dr. Mays Swicord, a member of the ICNIRP.

In addition, the NCRP is preparing to begin a revision of its assessment of RF/MW health risks. "We have the funding and an approved charter to evaluate and update Report No.86," said Dr. Tom Tenforde, the chairman of NCRP Committee 89 on Non-Ionizing EMFs. Report No.86, *Biological Effects and Exposure Criteria for Radiofrequency EMFs*, was issued in 1986 (see *MWN*, M/J86). He added that it was premature to say who will be on the review committee.

**CELLULAR PHONE INTERFERENCE**

**EMI to Hearing Aids...**Self Help for Hard of Hearing People (SHHH) has asked the FCC to ensure that digital cellular phones and other wireless PCS devices will not cause interference with hearing aids. In a February 13 letter, SHHH Executive Director Donna Sorkin called on the FCC to "avoid a situation where retrofitting is needed." SHHH's concern was raised by reports of hearing aid EMI from GSM phones in Australia, Denmark and elsewhere. "It's like a bumblebee landing in your ear and buzzing away," said SHHH engineer Jack O'Keeffe, speaking of his own experience. GSM modulation is not now used in the U.S., but may be introduced for PCS devices. FDA's Howard Bassen said that preliminary tests by his agency found EMI from GSM phones and also from those on the North American Digital Cellular (NADC) standard, now used in some parts of the U.S. "We've confirmed that there's an audible hum, but we haven't quantified it yet," he told *Microwave News*. Both GSM and NADC are Time Division Multiple Access (TDMA) schemes. Bassen and O'Keeffe said that future Code Division Multiple Access (CDMA) phones might cause less EMI, but that this is uncertain. Bo Piekarski, vice president for PCS at Ericsson Inc. in Richardson, TX, disagreed: "This issue isn't specific to any one type of cellular phone or hearing aid. Some hearing aids have a better resistance to interference than others. And other devices can cause EMI, like fluorescent lights and stereo equipment."

**CITIZENS GROUPS**

**Alliance Goes International...**The National EMR Alliance has dropped "National" from its name. "We now have a worldwide network of contacts in 11 different countries," said Cathy Bergman, the president of the alliance, which is a coalition of citizens concerned with the potentially harmful effects of all types of non-ionizing radiation. The five-year-old organization is seeking nonprofit status from the IRS, which would make contributions tax-deductible. The alliance has a bimonthly newsletter, *Network News* (\$35.00/year). For more information, contact: EMR Alliance, 410 West 53rd St., Suite 402, New York, NY 10019, (212) 554-4073.

**MEETINGS**

**RF Radiation and Health in Finland...**A workshop on the *Biological Effects Relevant to Amplitude Modulated RF Fields* will be held September 3-4 in Kuopio, Finland. Dr. Jukka Juutilainen of the University of Kuopio is the chairman of the organizing committee for the meeting, which will focus on the safety of hand-held mobile telephones: "The aim of the workshop is to discuss the available experimental evidence about the effects of weak RF fields, the importance of physical field parameters such as resonances, amplitude and frequency windows and coherence, to identify research needs, and to gain a better understanding of the interaction mechanisms of the suggested effects." The official language of the workshop will be English. Abstracts are due by June 30. For further information, contact: Joanne Robson, Center for Training and Development, University of Kuopio, PO Box 1627, FIN-70211 Kuopio, Finland, (358+71) 163 931, Fax: (358+71) 163 903.

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**MELATONIN**

**A Summit Meeting and Other Highlights...**Some 25 research scientists from Germany, Japan, Sweden and the U.S. assembled at a *DOE Melatonin Summit Conference* in Troutdale, OR, May 3-6. "It was a resounding success," said Dr. Richard Stevens, who helped organize the invitation-only meeting with his colleagues at the Battelle Pacific Northwest Labs in Richland, WA. While few new scientific results were presented, Stevens said that the meeting was useful in providing attendees with insights that they might not learn from published papers. The Battelle Press will publish the proceedings next year under the provisional title *The Melatonin Hypothesis: Neuroendocrine Effects of Light and Electromagnetic Fields* — a companion volume to Battelle's 1990 book, *Extremely Low Frequency Electromagnetic Fields: The Question of Cancer*....There are two new reports on the possible effects of EMFs on sheep. Dr. Jack Lee of the Bonneville Power Administration (BPA) in Portland, OR, and coworkers have again shown that 60 Hz EMFs do not affect serum melatonin levels in sheep grazing near a 500 kV power line (see *Bioelectromagnetics*, 16, pp.119-123, 1995, for the new results and *MWN*, S/O91, for a summary of the original findings). A parallel study with a different group of sheep showed that the power line caused an immunological response: a statistically significant reduction in the activity of interleukin-1 (IL-1) among those sheep exposed to mean electric and magnetic fields of 5.8 kV/m and 35 mG, respectively. This observation was made in a pilot study and the BPA has now started exposing a new herd of sheep in an effort to learn more about this response. (See *Joint HVAC Transmission EMF Environmental Study: Final Report on Experiment 3* (Portland, OR: BPA), December 1994.)...Dr. Russel Reiter and colleagues at the University of Texas Health Science Center in San Antonio have published "A Review of the Evidence Supporting Melatonin's Role as an Antioxidant" in the *Journal of Pineal Research* (18, pp.1-11, 1995). Previously, Reiter had suggested that the suppression of melatonin by magnetic fields could counteract its antioxidant action and might explain the clustering of different types of cancers among people exposed to EMFs (see *MWN*, N/D93).

**MILITARY SYSTEMS**

**HAARP Ignored No More...**An article on the U.S. military's High Frequency Active Auroral Research Program (HAARP) in the Fall 1994 *Earth Island Journal* has won an award from "Project Censored" as one of the top ten stories ignored by the mainstream news media in 1994. The Pentagon is spending \$26 million on a prototype for a proposed 1.7 billion watt transmitter in Alaska that HAARP documents say would act as an "ionospheric heater" for various military uses: creating a "virtual antenna in the ionosphere"; disrupting communications systems; and disabling missiles and satellites. The article, by Anchorage activist Clare Zickuhr and *Earth Island Journal* editor Gar Smith, was reprinted in *Censored: The News That Didn't Make the News and Why*, the 1995 yearbook of the media watchdog group. In a feature article about HAARP in the May/June 1994 issue of *Microwave News*, Zickuhr was quoted as saying that the military wants to "kick the atmo-



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sphere real hard and watch what happens.” The *Washington Post* recently picked up the story, running a piece about HAARP on April 17. Project Censored was founded by Carl Jensen in 1976.

**PROJECT ELF**

**Saved by a Single Letter...**Project ELF, the U.S. Navy’s submarine communications system, was spared the budget ax when it was apparently confused with the Navy’s EHF satellite communications program. In March, the Senate Appropriations Committee voted to eliminate Project ELF after critics argued that the end of the Cold War had made it unnecessary. The \$14 million budget item survived the House, prompting a conference committee to decide its fate. But before the committee could meet, the Navy held what Sen. Ted Stevens (R-AK) and Rep. Bill Young (R-FL) reported was a classified meeting on Project ELF. They later successfully convinced their colleagues to save the project. The Navy now says there was a major misunderstanding. “Stevens and Young were briefed on a program known as EHF—not ELF,” according to Jack Anderson and Michael Binstein in their April 10 syndicated column. A week earlier, Sen. Russell Feingold (D-WI), an opponent of Project ELF, accused Young of pulling an old “trick” by summoning “‘newly classified’ Navy information.” Feingold said that the Navy had told him there was no “classified” reason to maintain the program.

**REPRODUCTIVE HEALTH**

**No EMF Risks Found for Women and Men...**A prospective study of close to 3,000 pregnant women, funded by the National Institute of Drug Abuse and EPRI, has failed to find any EMF effects on fetal development. Dr. Michael Bracken and coworkers at the Yale University School of Medicine in New Haven, CT, had designed the study to see if EMFs from power lines and electrically heated beds—electric blankets and water beds—retard fetal growth. The findings appear in the May issue of *Epidemiology* (6, pp.263-270, 1995). (See also *MWN*, M/J86, N/D88 and J/A92.) Bracken also recently reported that he found no significant association between occupational exposures to EMFs, as determined by job titles, and subfertility, as defined by sperm morphology, motility and concentration. This report appears in *Fertility and Sterility*, 63, pp.384-391, February 1995.

**RESOURCES**

**New CMU EMF Booklets...**Dr. Granger Morgan of Carnegie Mellon University (CMU) in Pittsburgh has written a new booklet, *Fields from Electric Power*, explaining EMFs and their potential health effects. More precisely, there are four booklets: the “parent” booklet has three pouches, in each of which is a “details” booklet that elaborates on preceding overviews. The three details booklets are: *What are 60 Hz Fields?; Do 60 Hz Fields Pose Health Risks?; and What Can and Should Be Done About 60 Hz Fields?* This is the fourth EMF booklet published by CMU (see *MWN*, S/O92). To order, contact: Department of Engineering and Public Policy, CMU, Pittsburgh, PA 15213. The price of the new booklet is \$6.50 for single copies; CMU offers discounts for bulk orders.

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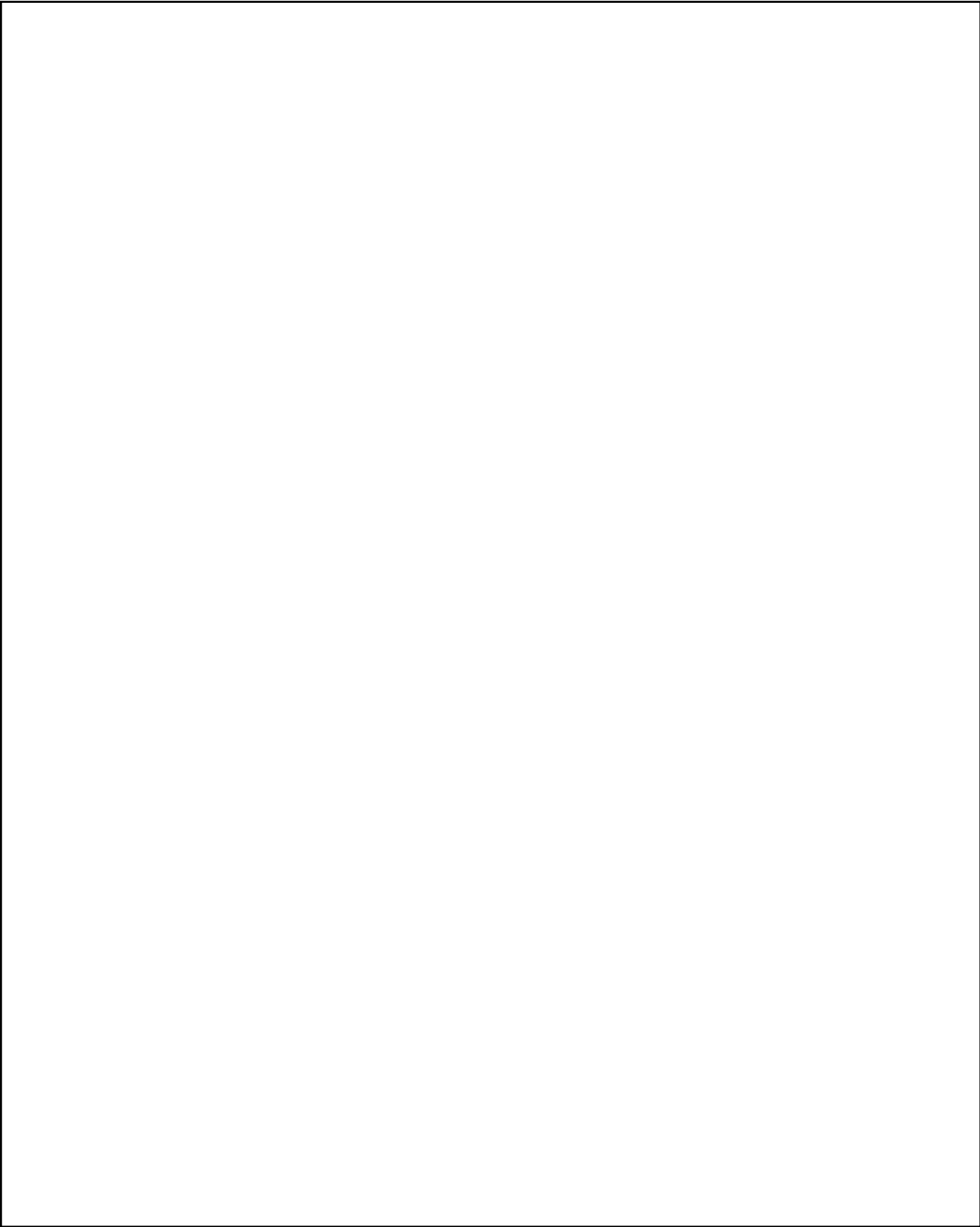
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