

**REPORT OF THE RF SAFETY COMMITTEE
TO THE
ARRL BOARD OF DIRECTORS**

January 2004

The RF Safety Committee has participated in the following areas over the past six months:

1. RF Safety Committee Activities.
2. Monitoring recent scientific studies regarding RF Safety.
3. Participation in the scientific RF Safety community.
4. Administrative issues.
5. Future Plans.

1 RF Safety Committee Activities

- 1.1 The ARRL working group reviewing the Element 3 General pool requested that the Committee review the questions in sub-element G0: RF Safety. Two questions were identified as being sufficiently ambiguous that the Committee recommended that they be either changed or deleted.
- 1.2 The Committee was contacted by a ham who was involved in setting a wireless networking system for a university classroom. He wanted to know if there was a potential RF safety issue with placing over one hundred WiFi transmitters in a single room. The Committee provided calculations based on the FCC Part 15 emission requirements to show that this situation would generate exposure levels far below the MPEs.
- 1.3 In a related news story in October: *“A pioneering elementary school district outside Chicago has been sued for installing a wireless computer network by parents worried that exposure to the network's radio waves could harm their children. According to the complaint, filed in Illinois state court, parents of five children assert that a growing body of evidence outlines ‘serious health risks that exposure to low intensity, but high radio frequency radiation poses to human beings, particularly children.’”* The Committee concluded once again that the maximum possible exposure from such a network would be far below the Maximum Permissible Exposure levels set in the FCC regulations.
- 1.4 A 90-year old ham wrote to the Committee, suggesting that his own experience shows that there is no danger of overexposure to RF radiation. He noted that he has been in close proximity to unshielded RF equipment since 1930 and shows no ill effects. The Committee responded that based on the power levels and the frequencies that he had been using for most of his life; mostly a few hundred watts in the low HF bands, the exposure that he received would have been below the MPE levels that we are required to follow today. Thus, his experience serves as evidence that the MPE levels are correct.

- 1.5 In November, Larry Wolfgang, WR1B, brought to the Committee's attention a problem that he discovered with one of the RF-Safety questions in the new General pool. The Committee agreed that we had missed that problem in our review of the question pool during the previous month, and endorsed his proposed rewording of the question.
- 1.6 In November, Ed Hare, W1RFI, asked the Committee for comments on a document that was being prepared by the IEEE Standards Coordinating Committee 28, of which Ed is a member. Once approved, this document will be called *IEEE Standard C95.7, Recommended Practice for Radio Frequency Safety Programs*. The Committee reviewed this document and concluded that, while the practices recommended in this document were good, they were not the same as what the Amateur Radio community currently does to insure that it meets the RF Safety requirements. The Committee recommended that Ed vote for this revision of C95.7 accompanied by comments that the introduction should be changed to acknowledge the existence of other, equally valid, practices such as those used by the Amateur Radio community.

2 Monitoring Scientific Studies

- 2.1 Last year the Committee discussed a product that was being offered by several companies, who claimed that it could block 99% of the radiation emitted by cellular telephones from being absorbed in the head. At that time the Committee concluded that these claims were hoaxes. In August, the Federal Trade Commission settled with two companies selling these products: Rhino International Inc., of Sag Harbor, N.Y., which agreed to pay \$342,665 to consumers who purchased its "WaveScrambler" patch, and Safety Cell Inc. of New York City. Both Rhino and Safety Cell will be required by separate settlements to have adequate scientific evidence to back future claims about their products. Earlier, the FTC won suits against two other companies it accused of similarly misleading statements about their cell phone shields. Stock Value 1 Inc. of Boca Raton, Fla., and Comstar Communications Inc. of West Sacramento, Calif., were also barred from making such claims.
- 2.2 The Committee has discussed the current lack of evidence supporting claims of harmful effects of "athermal" electromagnetic energy absorption. In August, the FCC officially agreed with this assessment by declining to open an Inquiry into updating its human exposure to RF signals rules. In particular, the petitioner in this case wanted the Commission to consider possible health hazards not covered by the current rules, including non-thermal effects and the effects of long-term low-level RF exposure. The FCC dismissed the petition, arguing that any such evidence should be presented to more appropriate expert agencies. The Commission also pointed out that its current human exposure rules have been upheld, in the face of similar arguments, by the Second Circuit Court of Appeals.
- 2.3 In October a report from the Netherlands stated that signals for the next generation of mobile phone services (3G) can cause headaches and nausea. The study compared the impact of radiation from base stations used for the current mobile telephone network with that of base stations for new 3G networks. A spokeswoman for the Dutch Economics Ministry said, "If the test group was exposed to third generation base station signals there was a significant impact ... They felt tingling sensations, got headaches and felt nauseous."

There was no negative impact from signals for current mobile networks. However, the study found that cognitive functions such as memory and response times were boosted by both 3G signals and the current signals. It said people became more alert when they were exposed to both. Government ministers responsible for Economic Affairs, Health and Telecommunications said follow-up research was needed to confirm the findings as well as to look at any longer-term health effects and biological causes.

- 2.4 In October, for the first time, the FCC proposed forfeitures against four commercial licensees for violating the radiofrequency radiation maximum permissible exposure limits at a multi-user site where the power density level produced by each individual licensee was within acceptable limits, but the cumulative effect exceeded the limits established by the FCC. The transmitters at issue are located on Mt. Wilson, in Los Angeles, California. The Commission proposed a forfeiture of \$10,000 for each station, for a total of \$40,000.
- 2.5 In the previous year the Committee discussed at great length the merits of the lawsuit by Dr. Christopher Newman, a neurologist who claimed that his brain tumor was caused by his use of a cellular telephone. This October, the 4th U.S. Circuit Court of Appeals upheld a lower court decision to throw out this \$800 million lawsuit against several mobile phone manufacturers and networks. The Court questioned the relevance of some of the expert testimony provided by Dr. Newman's case and further questioned the reliability of the research conducted by another expert witness, Dr. Lennart Hardell. This left the Newman case with no admissible evidence on causation and the district court then granted a summary judgment to the defendants to dismiss the charges.
- 2.6 The Committee noted a new item stating that the United States Government is planning a multimillion-dollar investigation to follow-up on ongoing studies by the World Health Organization, in the hope that it can bring closure to cell phone RF safety issues. The Committee commented that considering the thousands of studies that have been performed to date, one more such study is unlikely to change anything.

3 Participation in the Scientific RF Safety Community.

- 3.1 Dr. Lapin serves as a member of the IEEE Committee on Man and Radiation (COMAR).
- 3.2 Mr. Hare and Dr. Guy continue to serve on the IEEE Standards Coordinating Committee 28 on Non-Ionizing Radiation, which develops the standards for human exposure to RF energy. Mr. Hare maintains a list server for communications among members of this committee, and occasionally cross-pollinates pertinent issues between the RFSC and SCC-28 list servers.
- 3.3 Dr. Lapin reviewed an RF-safety related grant that originated in the Ukraine and was submitted to the U.S. Civilian Research and Development Foundation, a government-sponsored organization that provides research money to scientists in the former Soviet Union to help them transition from working on Weapons of Mass Destruction Research to other disciplines. This particular application dealt with the use of SHF energy to diagnose and treat skin lesions using, what the investigators claimed, "athermal effects" of this electromagnetic energy. Even though the background references were published in the Russian scientific literature and are unavailable in the West, the evidence for this effect that was presented in the proposal did not provide a high level of confidence that this was a true effect.

4 Administrative Issues

- 4.1 Mr. Hare continues to administer the RF Safety Committee email reflector, which handles correspondence between committee members. Other ARRL staff members and some former committee members monitor traffic over the reflector and we occasionally receive helpful comments from them. We have the capability to review things that were discussed in the past and search for keywords. In the second half of this year, 42 messages were posted on the RFSC reflector.

5 Future Plans

- 5.1 The Committee is attempting to obtain a discounted copy of the XFDTD Bio-Pro software package, which would allow us to model various exposure situations of interest to the committee. The package runs on PC-compatible computers and comes highly recommended by Dr. Guy, who uses it in his research and consulting work.

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