

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

January 2009

The RF Safety Committee 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.

## **1 RF Safety Committee Activities**

- 1.1 The committee responded to the concerns of a ham regarding exposure to 60 Hz magnetic fields. The concerned ham had purchased an ELF electromagnetic field meter and had measured values beneath overhead power lines and near cell towers that were an order of magnitude higher than the exposure level that he had heard was safe. He referenced an old edition of the ARRL Handbook that implied a safety limit at 2 milliGauss. The committee responded to him on two counts: First that various research studies that had been performed subsequent to the text that he read in the old handbook have discounted many of the concerns regarding low frequency magnetic fields. He was informed that more recent editions of the ARRL Handbook discuss these studies and the new thinking about exposures to these fields. Secondly, Dr. Kaune discussed his vast experience with scientific studies regarding safety guidelines for exposure to 60 Hz magnetic fields. The thresholds for safe exposure that he has seen have always been greater than 1000 milliGauss.
- 1.2 The committee commented on RF safety aspects of an antenna article that was submitted to QST leading to changes in the text. The published result was an improved article that clearly identified the issues that might lead to excessive RF exposure.
- 1.3 The committee responded to a ham who was concerned about using his radios since he had gotten a pacemaker. He was having trouble finding definitive answers from his doctor and the pacemaker manufacturer, both of whom informed him that pacemaker electromagnetic immunity has improved greatly over the years. We directed him to the information on this topic that we have put on the ARRL TIS page.
- 1.4 The committee responded to a neighbor of a ham who was concerned about exposure from the ham station next door. We informed him about the MPE's in the safety standards and FCC regulations requiring hams to meet them. We urged him to talk to his neighbor to convince himself that he was not being exposed to fields in excess of the MPE's. He replied later that he felt better after learning about the MPE's and planned to have a friendly conversation with his neighbor about the subject.

- 1.5 The committee responded to a ham who was concerned about exposure from ladder line in the shack. He was informed that the committee has studied this issue in the past and had concluded that 100W in the 10 meter band would require a distance of about 1 foot from the feedline to keep exposure below the MPE's. We also informed him that high voltages can be present on the wires so they should never be touched while transmitting.
- 1.6 The committee responded to a ham who claimed that he had heard a story about kidney cancer from radios clipped to the belt on the RAIN report. No one on the committee had ever heard of anything like this. We contacted Hap Holly, who also had never heard of this, and informed the ham that we couldn't confirm the story that he had heard and believed that it held no validity.
- 1.7 The committee provided editing assistance to Joel Hallas, W1ZR, to improve the accuracy of the RF safety contents of an article that he wrote for QST.

## 2 Monitoring Scientific Studies

- 2.1 The committee discussed a newspaper article that reviewed a number of recent scientific studies. This article was fairly even-handed for the most part. However one comment by the author pointed out the difficulty that we face when trying to explain scientific results to the public: "...scientists still can't say with certainty that placing a cell phone against the head is completely safe." Since all scientific results are expressed in probabilities, there can never be an honest scientist who says this.
- 2.2 The committee discussed at length the many news stories about the statements of Dr. Ronald Herberman, the director of a large cancer center in Pittsburgh. Dr. Herberman has no expertise in RF exposure issues but that did not stop him from warning people to minimize their exposure to RF sources, especially cell phones. There appears to be a movement occurring among cancer researchers who are being swayed by the opinions of some of their more infamous colleagues, notably from Sweden. Evidently these colleagues are contacting people in their field to lobby them that their cancer concerns are real, despite their difficulty in getting these studies peer reviewed and published. Dr. Herberman's stature in the field caused his comments to get excessive press exposure. Dr. Lapin published an explanation of this situation on the ARRL Website.
- 2.3 The committee discussed a new book that was published: "Scared Senseless" by Geoffrey Kabat. The book, by an epidemiologist, examines some case studies where exposures to different things, including electromagnetic fields, are compared to cancer incidence. The author makes that case that whatever weak links have been found were distorted and magnified by people with ulterior motives: activists, regulators and some scientists.
- 2.4 The committee discussed an article about Intel's development of a wireless power system. The technique is similar to one that the committee discussed last year from a laboratory at MIT. It was clear that the technique of using electromagnetic waves to transmit power was studied with little or no attention paid to human exposure issues. We concluded that we will need more information to form an opinion regarding RF safety.

## 3 Participation in the Scientific RF Safety Community.

- 3.1 Dr. Lapin continues to serve on the IEEE Committee on Man and Radiation (COMAR).
- 3.2 Mr. Hare continues 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 continues to serve as a reviewer for RF Safety-related papers submitted to IEEE Transactions on Microwave Theory and Techniques.

3.4 Dr. Lapin has testified about the health implications of RF energy at several local cell tower siting hearings.

#### 4 Administrative Issues

4.1 To facilitate the identification of RF safety issues in ARRL publications many members of the RFSC have been included in the list of ARRL Technical Advisors. This gives us access to the manuscripts that are being considered for publication in QST and QEX. The committee intends to periodically review these and to identify those that either have clear RF safety implications or those that need further clarification by the author.

4.2 The RFSC is considering recruiting one or more additional members with expertise in areas that are not currently well covered, such as pacemakers and behavioral responses to RF exposure.

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Chair, ARRL RF Safety Committee

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