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

July 2011

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 a ham who was concerned about the exposure to his family from using an attic antenna for 2 meter operation. After working through the MPE calculations for him, the result was that people should be between 2 and 5 feet (depending on their designation as controlled or uncontrolled population) horizontally removed from such an antenna, something that is easily achievable.

1.2 The Committee discussed a report of a power company worker who received a shock and what appeared to be RF burns from a grounded steel structure. A consultant hired by the power company suggested that the power lines had picked up the transmissions from an amateur radio operator in the area and that had gotten in to the power substation's ground system. The Committee agreed that there was little likelihood of the consultant's scenario and concluded that a more likely possibility could be the nearby 50kW AM radio transmitter that was resonant with the structure that the employee had touched. A research paper on this exact scenario was published in an IEEE journal recently. A suggestion was made to measure currents on the structure with a frequency counter to help identify the source. When these things were examined they were found to not be the source of the problem. The occurrence remains a mystery.

2 Monitoring Scientific Studies

2.1 A hotly debated study from a scientist at the National Institutes of Health (NIH) showed that exposure to RF energy from cellular telephones causes an increased usage of glucose by cells in the brain. The author, in noting this result, stated that no one knows what the physiological implications of the increased glucose usage might be. In fact, she surmised that it may be beneficial to use RF to increase glucose usage in underperforming cells. In discussion of this paper the Committee noted that measuring glucose utilization in the brain is not an exact science since so many things affect the brain's activity. The paper reported a localized 7% increase in glucose utilization due to RF exposure while many normal activities result in far greater changes. For instance, the simple act of opening one's eyes causes an increase of glucose utilization in the optical cortex that is many timer higher. It was also noted that even though the article discounts thermal effects as a reason for the increased glucose utilization, the authors estimated a 0.1°C temperature rise which, based on studies in rats, would account for the entire 7% change noted by this study.

2.2 The International Agency for Research on Cancer (IARC) recently agreed to a categorization for radio frequency energy. There are several categories that IARC uses to indicate the

carcinogenicity to humans from various influences: Category 1 contains definite carcinogens. Category 2 is divided into two parts: 2A contains probable carcinogens, 2B contains possible carcinogens. Category 3 contains items that cannot be classified. Category 4 contains items that are probably not carcinogens. RF energy was classified in Category 2B (a couple years ago the IARC classified power line fields in Category 2B). This was not a surprising finding since the majority of the research shows no carcinogenetic effect from RF energy but a few studies have claimed to show an association. Even though this announcement by the IARC caused a commotion in the popular press there was no new research identified and the determination said nothing definite. To put this in perspective, other items in IARC Category 2B include coffee, gasoline, glass wool, saccharin, urethane, welding fumes, "wood industries" and "carpentry and joinery."

3 Participation in the Scientific RF Safety Community

3.1 Mr. Hare continues to serve on the ICES (IEEE) SCC-28 RF Safety Standards Committee. He generally shares the voting ballots for changes to the standards with the Committee prior to voting on them.

3.2 Members of the Committee who are also IEEE members were given the opportunity to vote on the following IEEE Standard: *P1528: Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques.*

3.3 Dr. Lapin continues to testify about RF safety at zoning board hearings when cellular tower placement is being considered.

3.4 Dr. Lapin continues to serve as a member of the IEEE Committee on Man and Radiation, COMAR.

4 Administrative Issues

4.1 The Committee is considering taking a different role in the development of RF Safety questions for the various Question Pools. To date potential questions have been shown to the Committee for comment prior to their release in each new question pool. The Committee could provide a better service by developing an RF Safety Question Structure that includes the important aspects of RF Safety with different levels of the science behind the regulations that are apportioned to the appropriate testing levels. This new task is currently under consideration and no action has been taken to date.

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