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

July 2019

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 received correspondence from a Dutch ham who is planning to perform a satellite demonstration and is concerned about the potential human exposure from an SHF signal that is highly directional. Mr. Tell performed a detailed MPE calculation that likely surprised this ham by the short exclusion distance that he must provide in front of his dish antenna. Dr. Tribble added to the analysis by considering how the exclusion distances would change if the antenna is not perfectly aligned. This is an important consideration that is often missed; we tend to base our calculations on ideal antennas but in reality, how many actual antennas exactly match the theoretical design?

1.2 The IEEE C95.1 standard will release a major revision later this year. Additionally, ICNIRP (The International Commission on Non-Ionizing Radiation Protection) will be revising their safety guidelines. The RF Safety Committee will be reviewing these changes and summarizing what would affect radio amateur operations.

2 Monitoring Scientific Studies

2.1 The calculations performed for the ham performing satellite demonstrations were particularly poignant since the popular press lately has been inundated with some people's concerns about public exposure to the 5G cellular antennas that are being planned. These people would have everyone believe that the "new" frequency bands that will be used by 5G are unstudied and highly dangerous. The reality is that there has been considerable study at these frequencies and that they have been found to be less penetrating than the lower frequencies that we have been using. As such, SHF bands have higher Maximum Permissible Exposures than many other frequencies that we commonly use.

2.2 It appears that the emergence of 5G cellular service has given new purpose to the fear mongers who must have been waiting in the wings for something new to be developed. The Committee has noted that some of the claims about the dangers of 5G include killing wildlife, giving people terminal diseases, and causing the Earth's magnetic field to change.

2.3 The Committee discussed an article claiming that very low, nonthermal, doses of RF energy could selectively kill cancer cells while not affecting healthy cells. The inventors of this technique are from Germany and claim that a specific calcium channel in hepatic

tumor cells acts as an antenna to RF, causing it to open and flood the cancer cells with calcium so that they die. The committee was skeptical of this claim for several reasons. The wavelengths of RF used are far larger (hundreds of meters) than the so-called antenna structures, which are microns in size. Such claims have been made before and debunked. There does not appear to be any independent replication of these studies in the literature. Finally, there is a considerable amount of conflict of interest among the scientists touting this technique.

3 Participation in the Scientific RF Safety Community

3.1 Mr. Tell continues to serve as the chairman of the ICES (IEEE) TC-95 Subcommittee SC-2 RF Safety Standards Committee.

3.2 Mr. Hare continues to serve on the ICES (IEEE) SCC-28 RF Safety Standards Committee.

3.3 Mr. Tell continues to serve as the chairman of the IEEE Committee on Man and Radiation, COMAR.

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

3.5 Dr. Lapin has testified in zoning hearings to explain the exposure of the population to cellular telephone base stations and what science has shown about the potential for danger to human health.

4 Administrative Issues

4.1 Dr. Siwiak is a contributing editor for QST and Editor of QEX, and he shares any submitted RF Safety-related articles with the Committee.

Gregory Lapin, Ph.D., P.E., N9GL
Chair, ARRL RF Safety Committee

The ARRL RF Safety Committee

Chair

Gregory D. Lapin, Ph.D., P.E., N9GL
1206 Somerset Ave
Deerfield, IL 60015-2819

Committee Members

Robert E. Gold, M.D., W0KIZ
9197 N. Clydesdale Rd
Castle Rock, CO 80104-9102

William Kaune, Ph.D., W7lEQ
160 Cedarview Dr
Port Townsend, WA 98368-9527

James W. Ross, M.D., M.P.H., W4GHL
4599 Black Rail Ct
Providence Forge, VA 23140-3733

Kai Siwiak, P.E., Ph.D., KE4PT
10988 NW 14th St
Coral Springs, FL 33071-8222

Bruce Small, M.D., KM2L
10540 Stoneway
Clarence, NY 14031-2100

Richard A. Tell, K5UJU
10037 Long Meadow Rd
Madison, AL 35756-4247

Guy L. (Bud) Tribble, M.D., Ph.D., N6SN
470 W Maple Way
Woodside, CA 94010-6918

Emeritus Committee Members

Gerald Griffin, M.D., K6MD
123 Forest Ave
Pacific Grove, CA 93950-2619

William Raskoff, M.D., K6SQL
1769 Escalante Way
Burlingame, CA 94010-5807

Liaison to the ARRL Board of Directors

Arthur Zygielbaum, K0AIZ
6601 Pinecrest Dr
Lincoln, NE 68516-3573

ARRL HQ Staff Liaison

Ed Hare, W1RFI
ARRL Headquarters
225 Main St
Newington, CT 06111-1400

ARRL HQ Administrative Liaison

Carla Pereira
ARRL Headquarters
225 Main St
Newington, CT 06111-1400