

REPORT OF THE RF SAFETY COMMITTEE

TO THE

ARRL BOARD OF DIRECTORS

July 1999

The RF Safety committee has had a relatively busy past 6 months, with several related publications, seminars and contacts in the scientific community.

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

2. RF Safety Committee Activities (RF Safety Articles in QST).
3. Monitoring recent scientific studies regarding RF (WTR).
3. Participation in the scientific RF Safety community (NCI Study, IEEE Standards Committee, NCRP, RF Safety at Dayton).
4. Administrative issues (Email reflector, web pages, ARRL RF Safety text reprint booklets).
5. Future Plans (Rewriting RF Safety text, Public RF Safety Web Page, Dayton Hamvention).

1. RF Safety Committee Activities

1. Dr. Lapin, with editing assistance from the committee, wrote a short article that appeared as an Op Ed piece in the May issue of QST, to remind hams to be sensitive to the fears of the general public with regard to RF radiation.
2. Dr. Lapin, with editing assistance from the committee, wrote an article that appeared in the June issue of QST, describing the preparations and precautions that should be taken at Field Day sites with regard to RF Safety. A sidebar at the end of this article was included to introduce the RF Safety Committee to the membership.
3. Dr. Maxwell met with Dr. Lapin and Mr. Hare at the Dayton Hamvention for a several hour discussion of RF Safety committee operation and goals.

2. Monitoring Scientific Studies

1. There has been nothing published in the past six months that changes our understanding of the interactions between RF or ELF and biological tissue.
2. The Cellular Telephone Industry Association funded Wireless Technology Research (WTR) group completed its 6 year charter in June 1999 and has disbanded. In its final report, some ambivalent statements about the findings of research sponsored by this group were picked up, out of context, by the popular press and made to look as though the group was reporting new findings of dangers of RF radiation. Reviewers of the overall report have agreed that there were no

such conclusions and the current understanding of biological effects of RF has not changed.

3. Participation in the Scientific RF Safety Community

1. The National Cancer Institute is planning to perform an epidemiological study on the mortality of amateur radio operators. They have approached Dr. Cleveland at the FCC, who contacted the committee. The committee has decided to offer assistance to the NCI in order to help them correctly interpret the data that they collect. In particular, advice about the operating habits of radio amateurs may lead to more meaningful results. This decision was made because the only other such study, by Samuel Milham in the 1980s, was rife with inaccuracies and its conclusions, that hams have higher incidences of certain cancers, have been taken by many as established fact. It is our expectation that a more accurate study performed by the NCI will correct Milham's conclusions and significantly add to the overall knowledge base on RF Bioeffects. Other possibilities of the assistance that ARRL can provide are lists of silent keys and obtaining logbooks and station descriptions from the families of silent keys to paint a clearer picture of their RF exposure. *(I cannot emphasize enough how important this type of information is to an epidemiological study. When power line epidemiological studies that used wire codes, which are very rough estimates about exposure to fields emanating from power lines, were repeated with more realistic exposure estimates and measurements, most of the previously positive correlations between power lines and cancer were refuted).* There is a possibility that grant money may be available to hire additional personnel to accomplish these tasks. The committee would like the opinion of the Board before embarking on this endeavor.
2. Dr. Lapin and Mr. Hare presented two forums at the 1999 Dayton Hamvention, entitled "Why Should We Be Concerned with RF Safety?" and "How to Make Your Station RF Safe (and Comply with the New FCC Regulations While You're At It)". Considering the inconvenient times (Friday morning and Sunday afternoon) the attendance was reasonably good, with 30-40 people in each forum.
3. Dr. Lapin has been reviewing scientific papers for IEEE Standard C95.1, which is being revised during the next two years.
4. Drs. Guy and Lapin serve on the IEEE Committee on Man and Radiation, which develops informational text about various issues regarding the effects of nonionizing radiation on humans and medical devices. COMAR also publishes position papers about the dangers, or lack thereof, of various technologies with respect to nonionizing radiation.
5. Mr. Hare and Dr. Guy continue to serve on the IEEE Standards Coordinating Committee 28, which develops the standards for human exposure to RF energy.
6. Dr. Guy has performed quantitation of RF fields and associated SAR distributions from human exposure to fixed home mounted 1.92 GHz PCS antennas for AT&T Wireless Services, evaluation of SAR distributions in rats exposed to a 1.6 GHz laboratory exposure system for simulating human tissue exposure to Iridium communication antennas for Battelle Pacific Northwest Laboratory, and quantitation of SAR distributions in *in vitro* laboratory preparations for University of Texas Medical Center and the USAF at Brooks AFB.

7. Dr. Guy has served as a beta tester for computer FDTD software used for RF safety analysis developed by REMCOM Corp and another package developed by the U.S. Navy.
 8. Dr. Guy has been author and co-author on the following papers: *Guy, A.W., Chou, C.K. and McDougall, "A quarter century of in vitro research: A new look at exposure methods, Bioelectromagnetics.", 20:21-39, 1999.* and *Chou, C.K., Chan, K.W., McDougall and Guy, A.W., "Development of a rat head exposure system for simulating human exposure to RF fields from handheld wireless telephones.", Bioelectromagnetics, 20:75-92, 1999.*
 9. Dr. Siwiak continues to serve on the Motorola Electromagnetic Exposure Committee.
4. Administrative Issues
1. Mr. Hare continues to administer the RF Safety committee email reflector, which handles correspondence between committee members. Traffic over the reflector is monitored by other ARRL staff members and we occasionally receive helpful comments from them.
 2. Mr. Hare has also developed an RF Safety committee web site. The current site is for internal use (i.e. It is not linked from any other page; one must know the exact URL address to get into this area. However, it was not felt that the material is sensitive enough to require password access). Text from RF Safety writing by committee members will be stored on this site for review by the other committee members. There are also plans to make Powerpoint slides from RF Safety talks given by committee members available on this site to aid other committee members in preparing similar talks.
 3. Dr. Lapin requested a review of all RF Safety related text that appears in ARRL publications when it became evident that there is more text than we were aware of and some of it was old and misleading. Mr. Hare prepared a booklet for committee members containing copies of all such material.
5. Future Plans
1. The committee continues to consider restructuring of the RF Safety text that appears in all ARRL publications. With the text divided into subject areas, it will be possible for future updates of ARRL publications to select different sections that are pertinent to the subject matter of the publication. For instance, it is not necessary to include a discussion of epidemiological research in the RF Safety text of a license manual. The current structure of the subdivision is taken from the outline of the workshop that was scheduled for the IEEE conference. When subdivided in this way, it should also be easier to update sections rather than reviewing the entire document every time a change is made.
 2. The committee will review all of the RF Safety questions in the Element 3a and 3b question pools and suggest changes, corrections, and new questions.
 3. Mr. Hare, with the help of the committee, plans to develop an RF Safety Committee web page to disseminate RF Safety information to the public.
 4. Dr. Lapin has contacted the organizers of the Dayton Hamvention to suggest that the 2000 Hamvention again include forums about RF Safety.

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Chair, ARRL RF Safety Committee

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