

# The ARRL RF Safety Committee

Kai Siwiak, KE4PT  
2018 March 7

- *Who are the RFSC?*
- *What does the RFCS do?*
- *When does exposure affect you?*
- *Where are the exposure dangers?*

# The ARRL RF Safety Committee

1. Congress mandated, and in Aug 1996 the FCC announced new rules governing RF Exposure
2. ARRL petitioned, and the FCC extended the effective rule date to Jan 1, 1998
3. ***The RF Safety Committee formed in 1998 to address this new compliance burden on Radio Amateurs, and to monitor and participate in scientific studies and committees***
4. The RFSC Reports to the ARRL Board of Directors twice a year

Who?

# Experts in RF Safety and Bio-Effects



Chair

Gregory D. Lapin,  
Ph.D., P.E., N9GL



Robert E. Gold,  
M.D., WØKIZ



William Kaune,  
Ph.D., W7IEQ



James W. Ross,  
M.D., M.P.H., W4GHL



Kai Siwiak,  
Ph.D., P.E., KE4PT



Bruce Small,  
M.D., KM2L



Guy L. (Bud) Tribble,  
M.D., Ph.D., N6SN



Arthur W. (Bill) Guy,  
Ph.D., W7PO(SK)

# Affiliated with ARRL

Gerald Griffin, M.D., K6MD,  
Member Emeritus

William Raskoff, M.D., K6SQL,  
Member Emeritus

Arthur Zygielbaum, KØAIZ,  
Liaison to ARRL Board of Directors

Carla Pereira,  
ARRL HQ Administrative Liaison

Ed Hare, W1RFI,  
ARRL HQ Staff Liaison

See also <http://www.arrl.org/who-we-are>

# Report of the RF Safety Committee to the ARRL Board of Directors, *January 2018*

*What?*

*The RF Safety Committee was active in the following areas over the past six months:*

1. RF Safety Committee Activities
2. Monitoring recent scientific studies regarding RF Safety
3. Participating in the scientific RF Safety community
4. Administrative issues

# 1—RF Safety Committee Activities

- 1.1 Identified the need for additional educational materials on RF safety; *RF Safety and You*, no longer in print; RF safety sections in the *ARRL Handbook* and the *ARRL Antenna Book*; *FCC OET Bulletin 65* have not been updated in almost 20 years
- 1.2 New: concerns about the 2200-meter band; everything is in the near field!

## 2—Monitoring Scientific Studies

- 2.1 Reviewed extreme editorial pronouncements by the World Health Organization's International Agency for Research on Cancer (WHO-IARC)
- 2.2 Reviewed recent study of brain development of children whose mothers used cellular telephones while pregnant
- 2.3 Discussed recent trend in meta-analysis papers
- 2.4 California Department of Public Health released "*How to Reduce Exposure to Radio Frequency Energy from Cell Phones*" prematurely causing a furor in the popular press, final version was toned down

## 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.
- 3.2 **Dr. Lapin** continues to serve as a member of the IEEE Committee on Man and Radiation, COMAR.
- 3.3 **Dr. Siwiak** serves as a consultant to the Q-Track Corporation on matters of RF exposure related to body mounted small MF and HF transmitting loops
- 3.4 **Dr. Siwiak** developed the accredited continuing education course, “*Cell Phone and RF Exposure Awareness*”, offered online by SunCam Corporation



## 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

*see more reports at <http://www.arrl.org/arrl-rf-safety-committee-board-reports>*

*When?*

## Are *YOU* are Involved?

You *certify* that you *will comply* every time you use FCC form 605 for *any purpose*

*You may be exempted from a formal evaluation*  
*but, ALL (no exceptions)* Amateur Radio stations must **comply** with **47 CFR §97.13(c)** FCC RF Exposure Regulations enumerated in **§1.1310** Radiofrequency radiation exposure limits.

# NCVEC QUICK-FORM 605 APPLICATION AMATEUR OPERATOR/PRIMARY STATION LICENSE

## SECTION 1 - TO BE COMPLETED BY APPLICANT

PRINT LAST NAME	SUFFIX (Jr., Sr.)	FIRST NAME	M.I.	STATION CALL SIGN (IF ANY)
MAILING ADDRESS (Number and Street or P.O. Box)				FEDERAL REGISTRATION NUMBER (FRN) - IF NONE, THEN SOCIAL SECURITY NUMBER (SSN)
CITY	STATE CODE	ZIP CODE (5 or 9 Numbers)	DAYTIME TELEPHONE NUMBER (Include Area Code)	
E-MAIL ADDRESS (MANDATORY)				

**Basic Qualification Question:**

Has the Applicant or any party to this application, or any party directly or indirectly controlling the Applicant, ever been convicted of a felony by any state or federal court?  YES

If "YES", see "FCC BASIC QUALIFICATION"

I HEREBY APPLY FOR (Make an X in the box)

- EXAMINATION for a new license
- EXAMINATION for a new class of license
- CHANGE of name on my license

Former Name: \_\_\_\_\_  
(Last name) (Suffix) (Initials)

Do you have another license application with the FCC which has not been acted upon?  YES

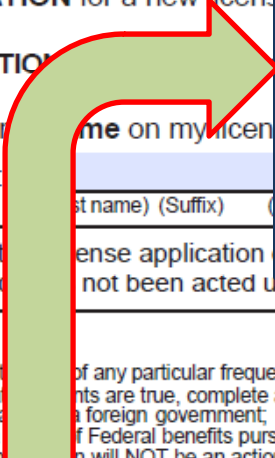
**I certify that:**

- I waive any claim to title of any particular frequency regardless of prior use by license or otherwise;
- All statements and applications are true, complete and correct to the best of my knowledge and belief and are made in good faith;
- I am not a representative of a foreign government;
- I am not subject to a Federal ban on Federal benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. § 862;
- The construction of this application will NOT be an action which is likely to have a significant environmental effect (See 47 CFR Sections 1.1301-1.1319 and Section 97.13(a));
- I have read and WILL COMPLY with Section 97.13(c) of the Commission's Rules regarding RADIOFREQUENCY (RF) RADIATION SAFETY and the amateur service section of OST/OET Bulletin Number 65.

**Signature of Applicant:**

**X** \_\_\_\_\_ Date Signed: \_\_\_\_\_

I certify that:  
I have read and WILL COMPLY with Section 97.13(c) of the Commission's Rules regarding RADIOFREQUENCY (RF) RADIATION SAFETY and the amateur service section of OST/OET Bulletin Number 65.



FCC 605

# FEDERAL COMMUNICATIONS COMMISSION

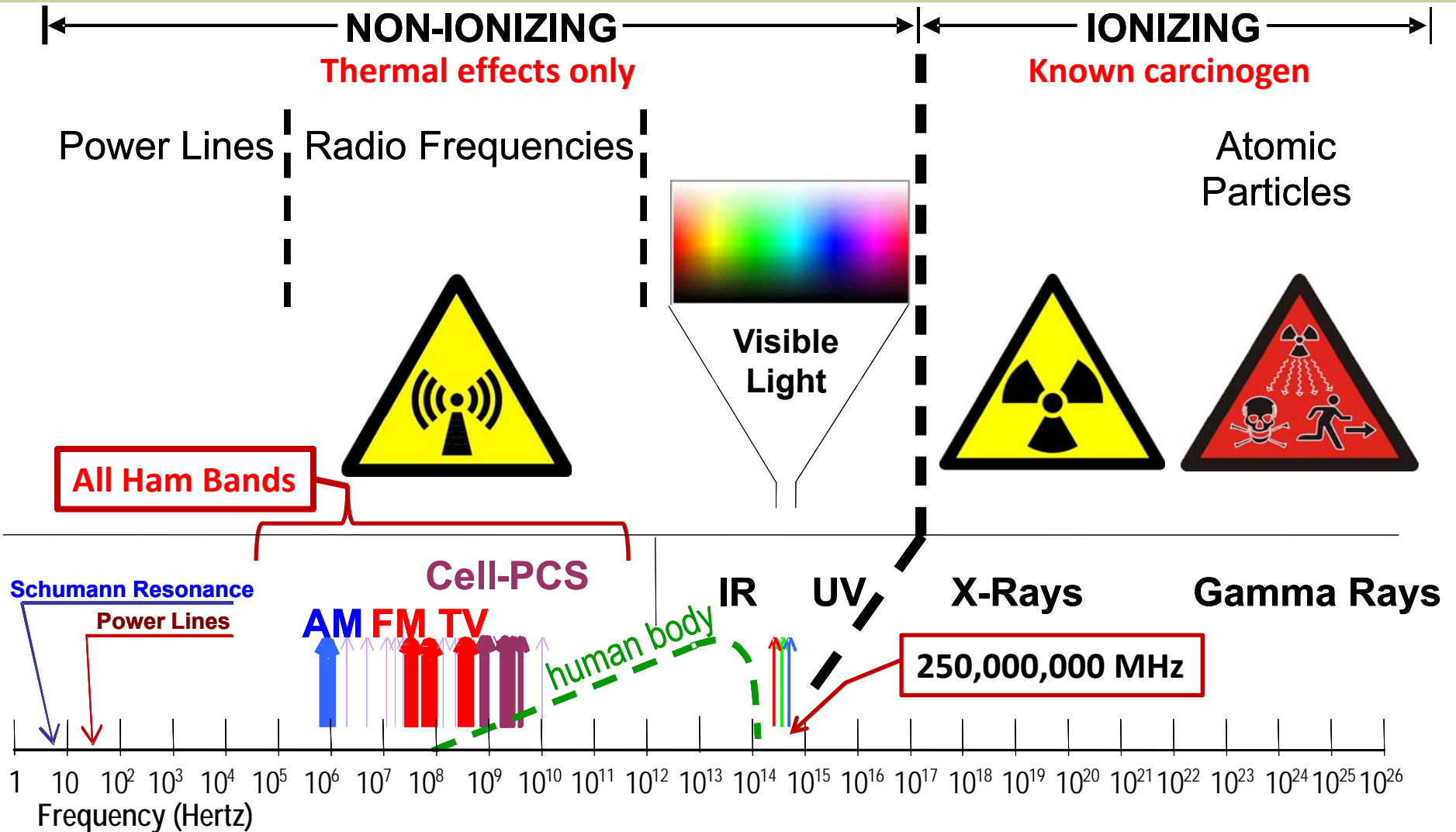
Main Form

## General Certification Statements

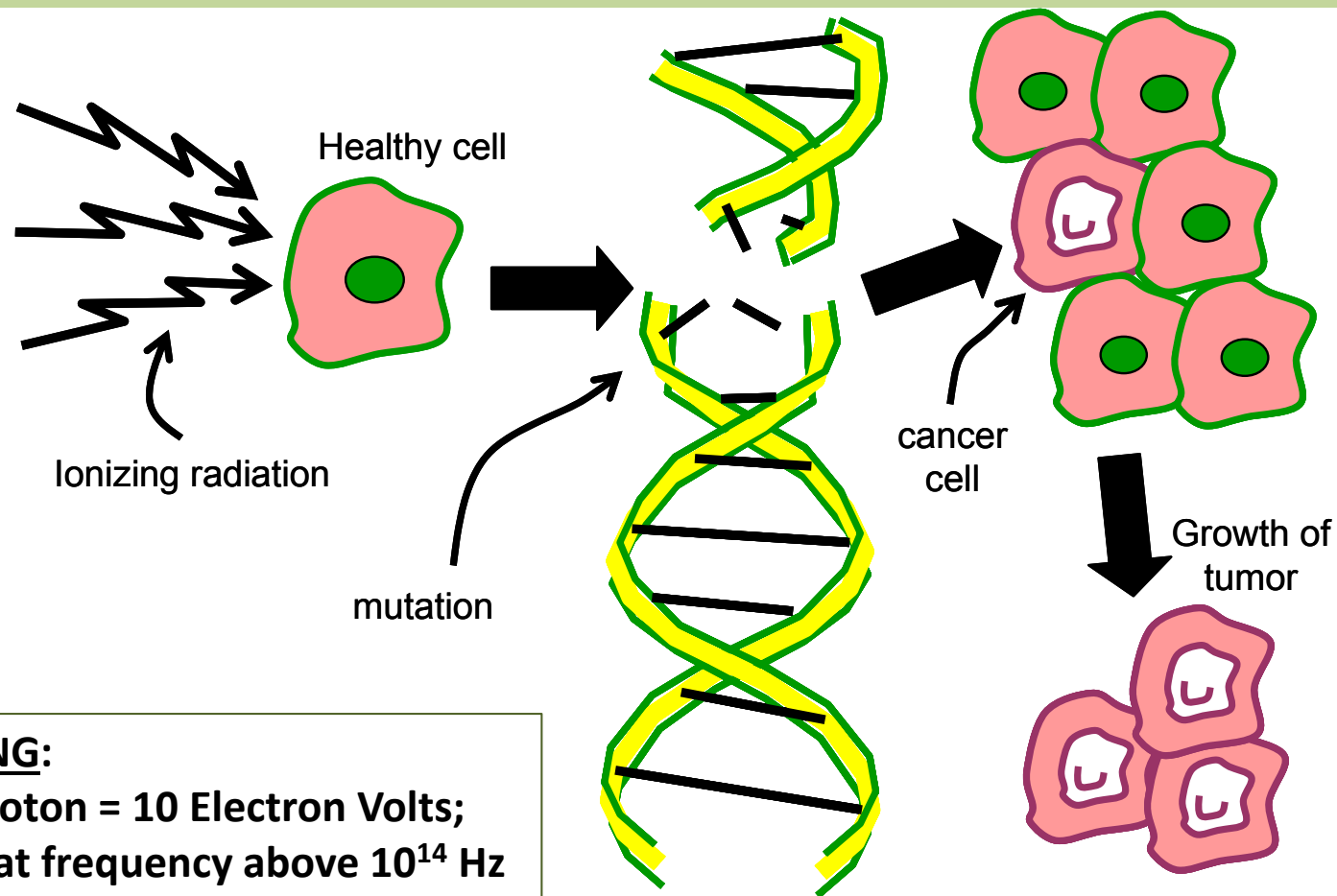
6) Amateur Applicant/Licensee certifies that they have READ and WILL COMPLY WITH Section 97.13(c) of the Commission's Rules (available at web site <http://wireless.fcc.gov/rules.html>) regarding RADIOFREQUENCY (RF) RADIATION SAFETY and the amateur service section of OST/OET Bulletin Number 65 available at web site <http://www.fcc.gov/oet/info/documents/bulletins/>

Where?

# the Concern is: IONIZING Radiation



# The Known Concern: Ionizing radiation can cause the development of cancer



## **IONIZING:**

**One photon = 10 Electron Volts;  
occurs at frequency above  $10^{14}$  Hz  
(250,000,000 MHz)**

# You and Radiation Exposure

1. There are no known effects other than heating at any Amateur Radio (or cellular telephone) frequencies
2. Compliance levels were set 10s of dB below any measurable thermal readings
3. A REAL danger is exposure to the Florida Sun
4. Solar levels are  $1000 \text{ W/m}^2$ , with significant radiation in the carcinogenic region above violet light, (250,000,000 MHz) *a thousand times higher in frequency than the highest frequency ham band*
5. Remember, a sun tan is the first manifestation of a nuclear radiation burn!

**Question?**

**Thank You for  
Your Kind  
Attention**



# Meta-Analysis

“A meta-analysis is a statistical analysis that combines the results of multiple scientific studies.

The basic tenet of a meta-analysis is that there is a common truth behind all conceptually similar scientific studies, but which has been measured with a certain error within individual studies. The aim in meta-analysis then is to use approaches from statistics to derive a pooled estimate closest to the unknown common truth *based on how this error is perceived.*”

– <https://en.wikipedia.org/wiki/Meta-analysis>