



5th Annual TECHCON
West Central Florida Section Technical Conference
2019 February 22-23

I — The ARRL RF Safety Committee

Kai Siwiak, KE4PT

II — A Proposed DXCC Rule Change

Pete Rimmel, N8PR



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- *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,
PhD, PE, N9GL**



**Robert E. Gold,
MD, WØKIZ**



**William Kaune,
PhD, W7IEQ**



**James W. Ross,
MD, MPH, W4GHL**



**Kai Siwiak,
PhD, PE, KE4PT**



**Bruce Small,
MD, KM2L**



**Guy L. (Bud) Tribble,
MD, PhD, N6SN**



**Richard (Ric) Tell,
K5UJU**

Affiliated with ARRL

**Gerald Griffin, MD, K6MD,
Member Emeritus**

**William Raskoff, MD, K6SQL,
Member Emeritus**

**Vice Director Art Zygielbaum,
KØAIZ, Liaison to the BoD**

**Carla Pereira, KC1HSX
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 2019*

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 **Dr. Siwiak** noted that as a VE he makes a point of asking those being tested if they understand the statement that they signed on FCC Form 605 regarding having read and agreement to comply with the FCC radiofrequency radiation safety rules. He was always met with blank stares. He suggested that this stage of the licensing process be formalized to make sure that prospective hams understand it. He also suggested that a copy of OET Bulletin 65 be available at each VE testing site. Other than Bulletin 65, there is little else in print, or on the web, that would qualify as training on the subject.

2—Monitoring Scientific Studies

- 2.1 A Swiss research group paper was discussed, which claimed that 10 minutes per day of cell phone usage produces a decline in image processing ability among adolescents. A review by Committee members revealed many inconsistencies. The Committee's conclusion was that this is not a paper to be trusted
- 2.2 The long running NIEHS NTP study of rat exposure was discussed again. The Committee discussed how, as more information about the study was released, it has become clear that the exposure system was far from optimal.

2—Monitoring Scientific Studies

- 2.3 The Committee reviewed claims that Cuba used microwaves to harm US consular officials in Havana. The hype referenced the “microwave hearing effect,” (known about since the 1960s and is a curiosity). The faint click was never shown to cause any pain or other deleterious effects. Unfortunately, the press speculated that Cubans had ‘weaponized’ it
- 2.4 The Committee reviewed an article about the history of RF safety standards. It was a great reminder that scientific analysis of RF safety has been taking place for 70 years. A vast amount of study has already taken place.

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 zone hearings.
- 3.6 **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

4—Administrative Issues

- 4.1 The Committee welcomes a new member, **Richard (Ric) Tell, K5UJU**. Ric served 20 years as Chief of the Electromagnetics Branch of the Office of Radiation Programs at the U.S. Environmental Protection Agency, 31 years running a consulting firm specializing in EMF exposure assessment and particularly the investigation of potential radiofrequency hazards. He is an active volunteer with the IEEE in human exposure standard development and is a Life Fellow of IEEE.
- 4.2 **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 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 been convicted of a felony by any state or federal court?
If "YES", see "FCC BASIC QUALIFICATION" section of the application.

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

EXAMINATION for new license
 EXAMINATION for upgrade
 CHANGE name on my license
Former Name: _____
(Last name) (Suffix)

Do you have a license application pending with the FCC which has not been acted upon?

- I certify that:**
- I waive any claim of copyright or other intellectual property rights in any material submitted with this application.
 - All statements and information provided 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 any Federal benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. § 862;
 - The construction of this station 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.

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.

Signature of Applicant:

X _____ Date Signed: _____

FCC 605

FEDERAL COMMUNICATIONS COMMISSION

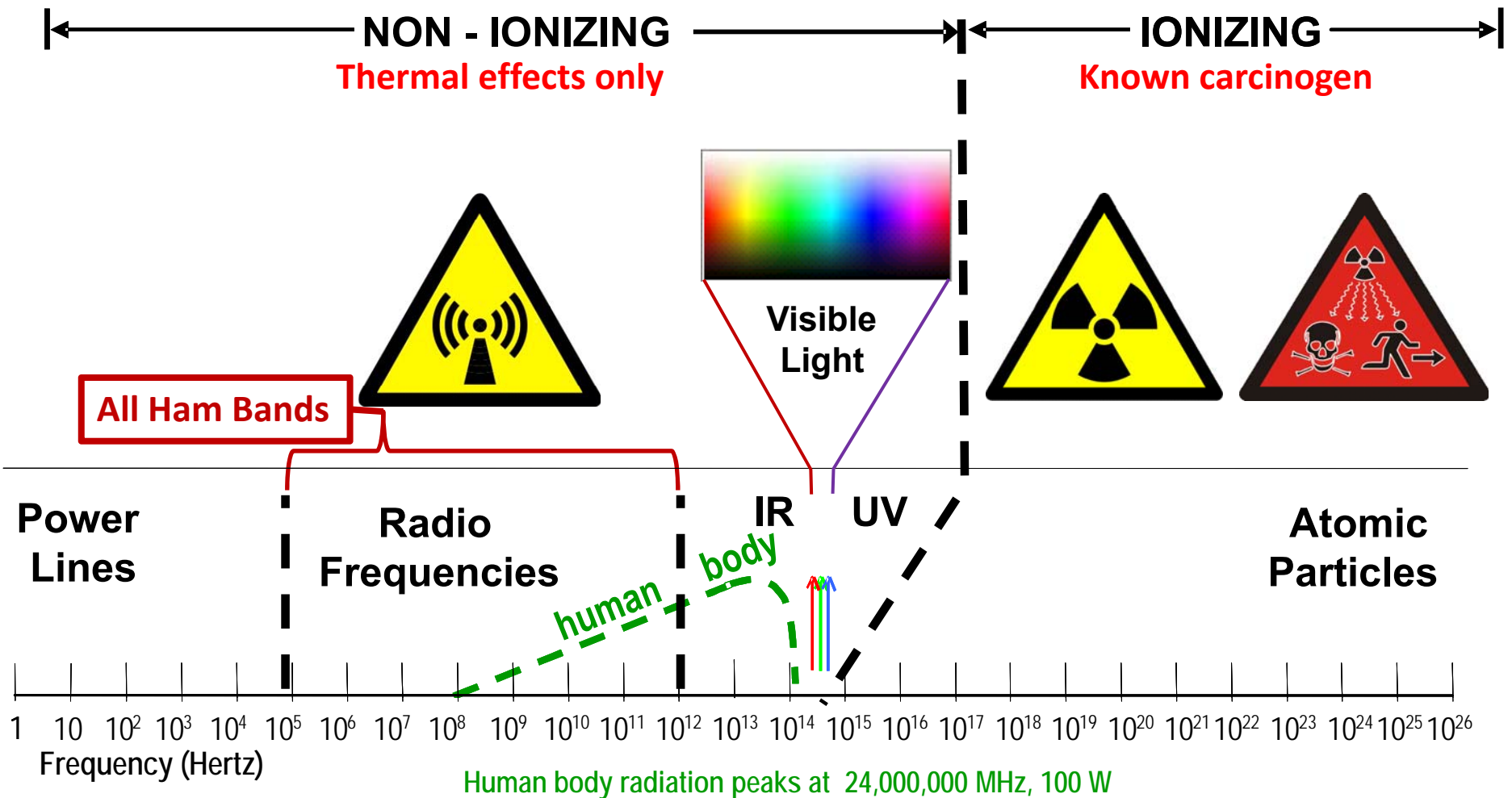
Main Form

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/>

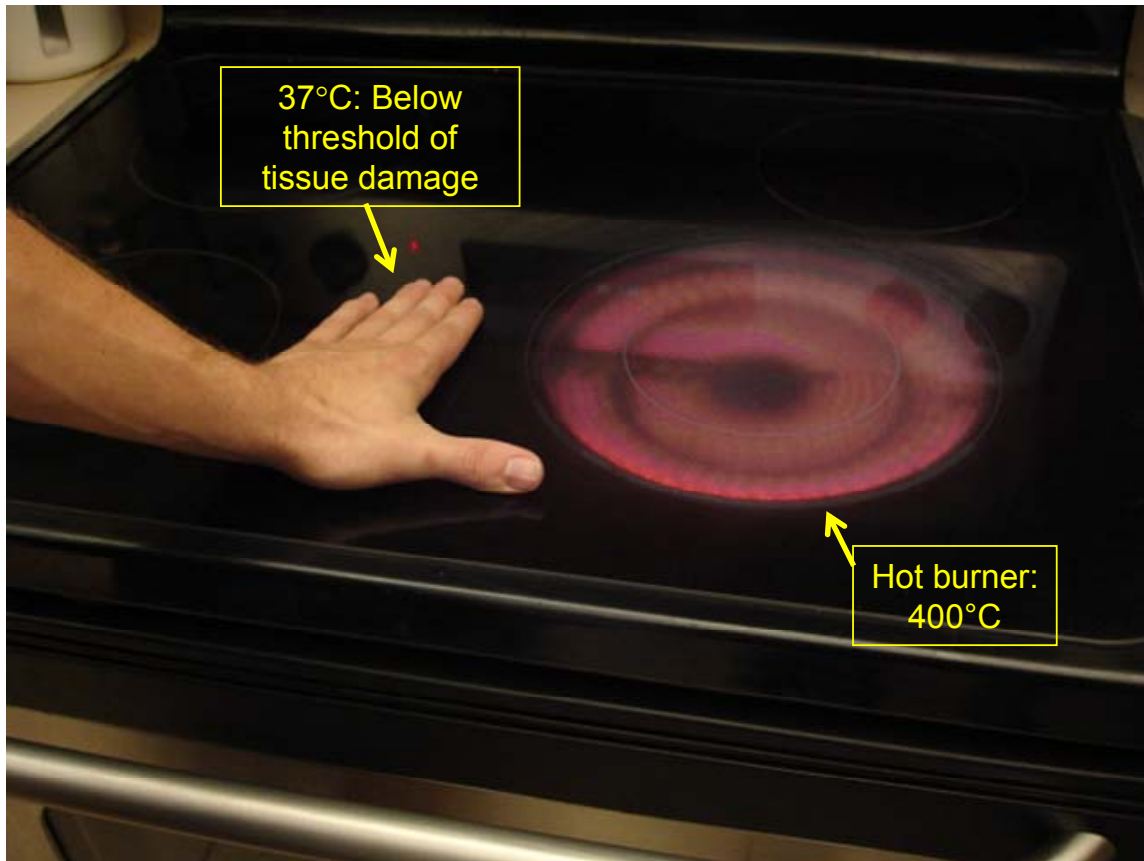
Where?

the Concern is: IONIZING Radiation and Thermal Effects



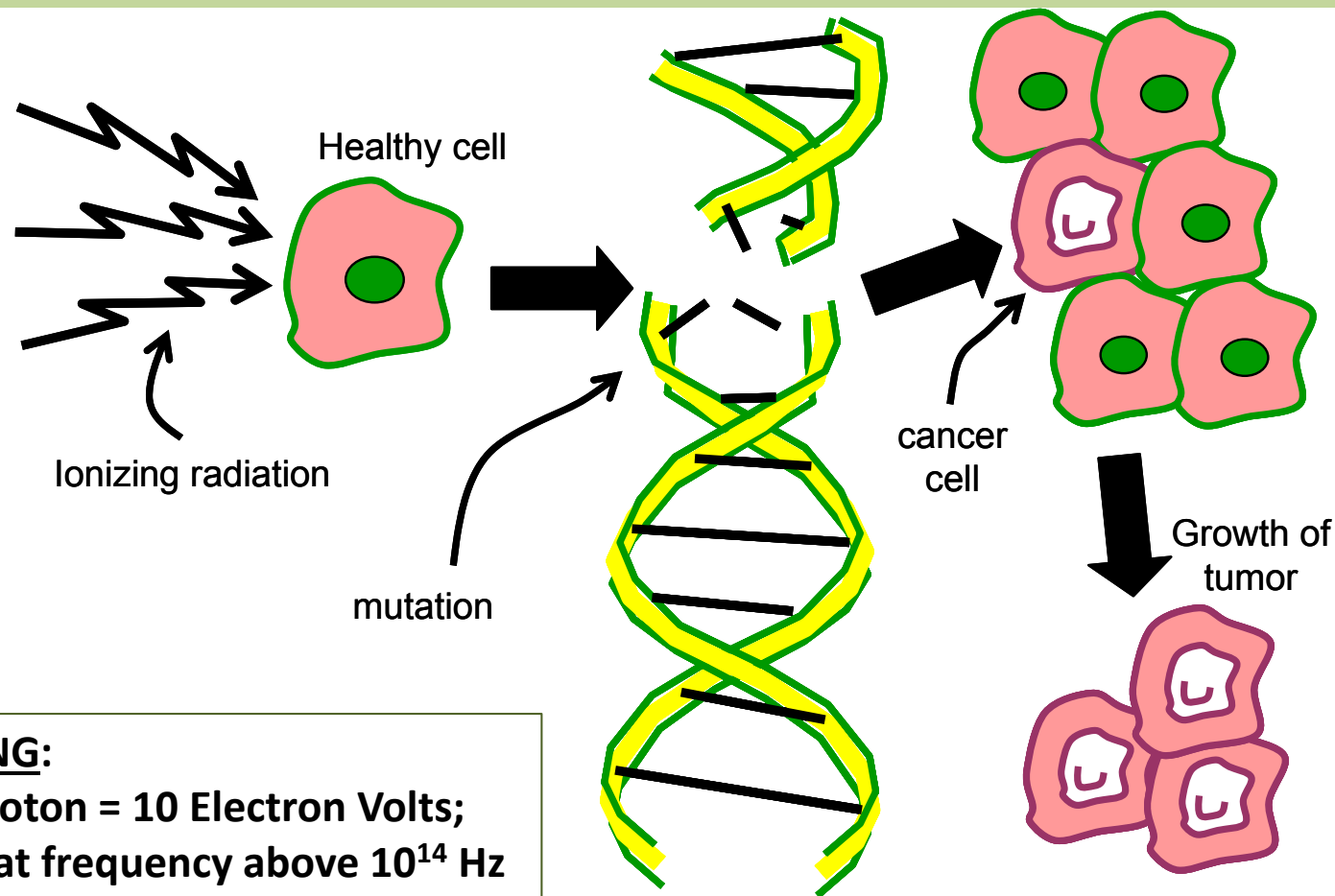
Where?

Known Concern is: Excessive Heating



- There is a safe threshold level (“zero exposure” – burner is OFF, up to some level, that heats the surface to some 10’s of degrees above the ambient temperature.
- Above that is clearly dangerous – it will burn flesh.
- **This is what FCC rules address for RF.**

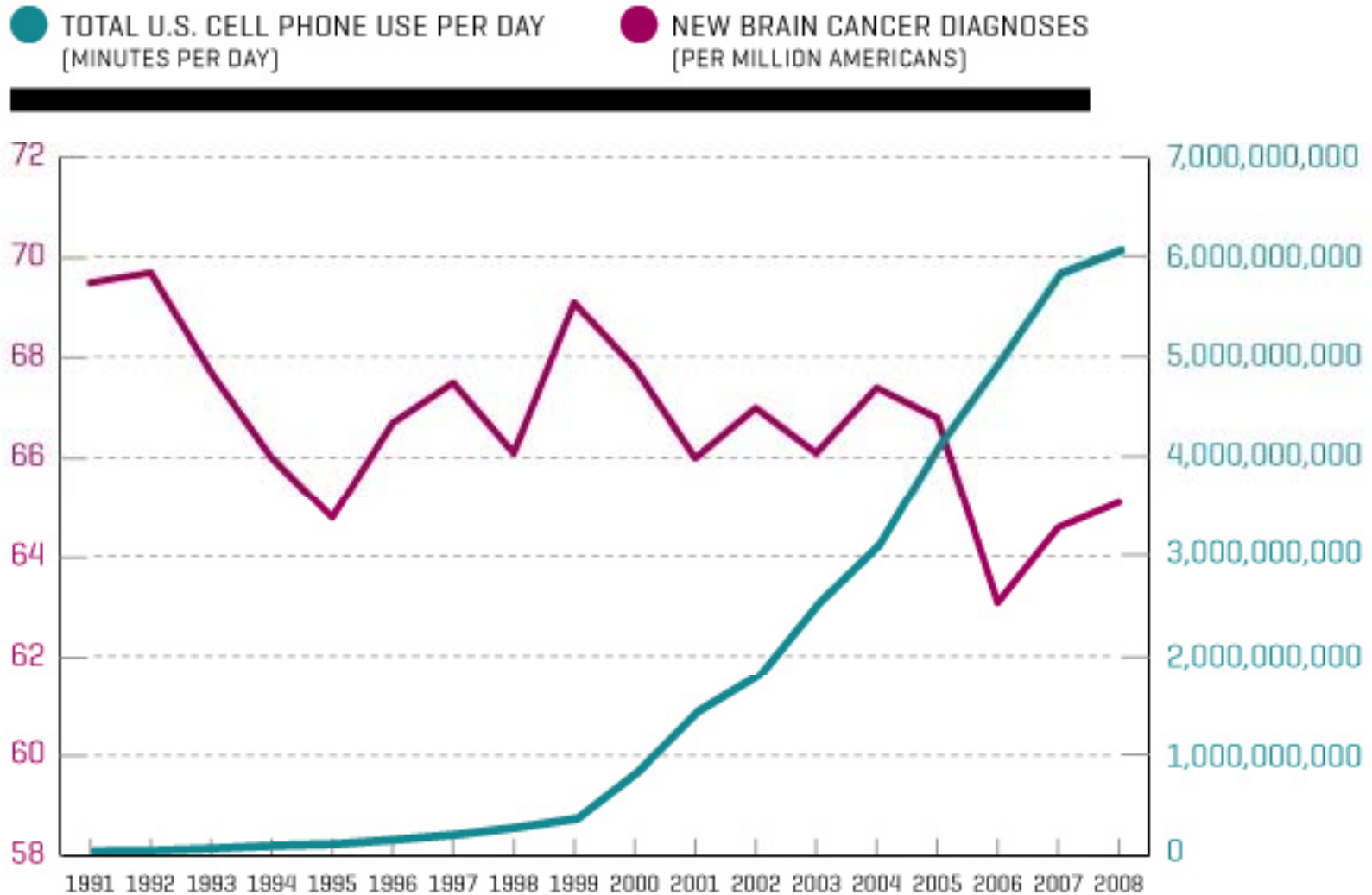
The Known Concern: Ionizing radiation can cause the development of cancer



IONIZING:

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

Things the RFSC Monitors



Source: Scott Woolley, "Cell Phone Use Is Way up. So Why Did Brain Cancer Rates Fall?"
tech.fortune.cnn.com, June 7, 2011.

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 the threshold of any measurable thermal readings
3. A REAL danger is exposure to the Florida Sun
4. Solar levels are 1000 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!

Part I – Questions?



**Thank You For
Your Kind
Attention**



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- **DXCC Rule Change Proposed by
The South Florida DX Association**

Pete Rimmel, N8PR

II — DXCC Rule Change



Section I Rule 8:

Change Proposed by The SFDXA

— allow shipboard operation

(A) Proposal to the DXCC Committee

1. **At present:** All stations contacted must be “land stations”. Contacts with ships and boats, anchored or underway, and airborne aircraft, cannot be counted.
2. **Proposed:** stations may operate from ships and boats either anchored or underway that are located within the political confines of a DXCC entity.
3. Proof of actual location must be given using current available location technology, such as the **Automatic Identification System (AIS) or Satellite-AIS systems.**

(B) Proposal to the DXCC Committee

History of Claims and Abuses:

1. You may remember disputes and lawsuits relating to acceptance of certain DX operations that were questioned by the ARRL.
2. Some operations had submitted for credit operations that were proven to be located over 1000 miles from the actual entity that was claimed
3. Up to that time operators had been assumed trustworthy, regarding the location of an operation
4. **Rule 8** was added to the DXCC rules to clearly define that in order to count operation must be on land

(C) Proposal to the DXCC Committee

What is Different Now?

5. Now we can prove location unambiguously and securely using **Automatic Identification System (AIS)**, a tracking system that uses **transponders on ships**
6. The International Maritime Organization International Convention for the Safety-of-Life at Sea requires AIS to be fitted aboard international voyaging ships with 300 or more gross tonnage (GT), **and all passenger ships** regardless of size (since the year 2002)

(D) Proposal to the DXCC Committee

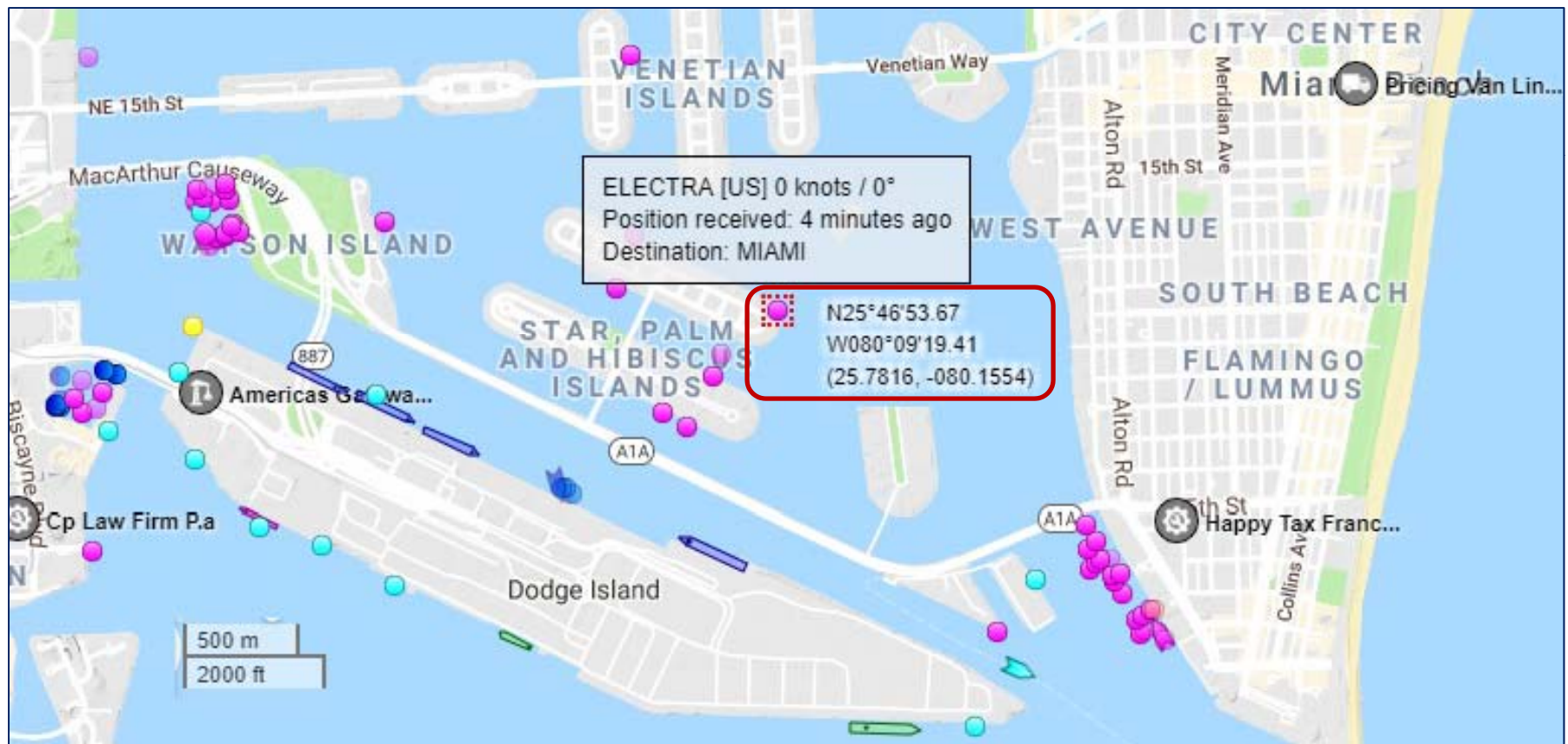
Automatic Identification System (AIS)

7. Sends data every 2 to 10 seconds while underway, and every 3 minutes while a vessel is at anchor

8. **Vessel sends (among other things):**
 - Maritime Mobile Service Identity (MMSI) – a unique nine digit identification number,
 - Navigation Status – “at anchor”, “under way using engine(s)”, “not under command”, etc.
 - Positional Accuracy: Lat. and Lon. to 0.0001 minutes (a few inches), and time in UTC to one second

(E) Proposal to the DXCC Committee

Automatic Identification System (AIS); A Sample



(F) Proposal to the DXCC Committee

With Automatic Identification System (AIS)

1. The Amateur Radio Community has an exact means for determining where a station afloat is located
2. There is no longer a need for “dry-foot” operations (especially in **high cost** and **life-threatening** scenarios)
3. For these reasons, I urge you all to consider making this change to the DXCC rules.

**Thank you and 73 on behalf of The SFDXA,
Peter Rimmel, N8PR, ARRL TA, Retired USCG Passenger
Vessel Master, Member of the ARRL DX Advisory
Committee**

Part II – Questions?



**Thank You For
Your Kind
Attention**