Health Canada review of the Evidence has led to unsafe conclusions on Safety Code 6

Input to the Parliamentary Health Committee

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My Qualifications to address this issue

- I am a physician epidemiologist, specializing in cancer etiology, prevention and screening
- I have performed research on ionizing radiation and cancer, electromagnetic fields and cancer, and other aspects of cancer causation
- I have served on many committees assessing carcinogenicity of various exposures, including Working Groups of the International Agency for Research on Cancer (IARC)
- I was visiting Senior Scientist in the Monographs programme at IARC, September 2011-January 2012 where I reviewed the scientific literature supporting designation of Radiofrequency Fields as a Class 2B possible carcinogen
- I was one of the peer reviewers of the draft Royal Society of Canada Report on Safety Code 6

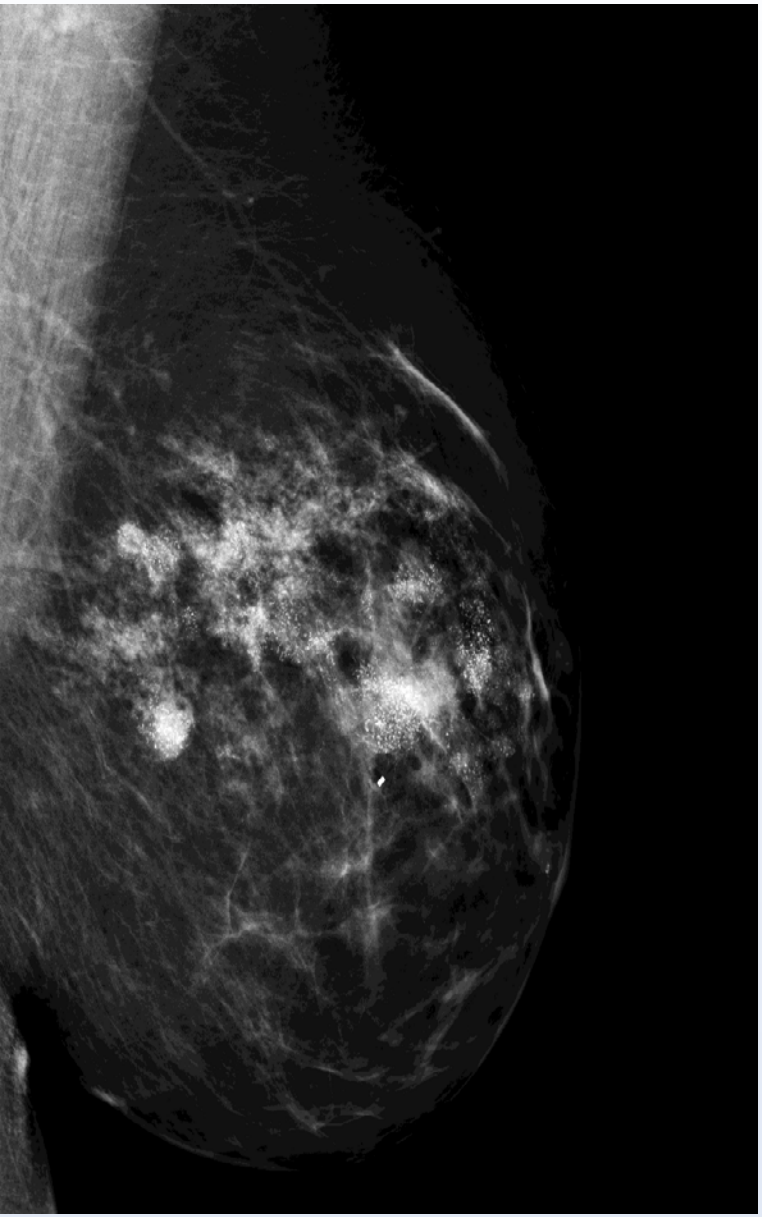
Concerns re the Science behind Safety Code 6

- The Royal Society of Canada Expert Panel (2014) review of the evidence was inadequate:
  - The Panel was conflicted, the chair changed, the Panel had insufficient expertise in Epidemiology, and insufficient time to complete its task.
  - The Panel relied on reviews, not careful consideration of relevant studies.
  - The Panel largely ignored the studies pointing to adverse biological effects consistent with carcinogenicity.
- The current version of Safety Code 6 ignores recent epidemiology evidence: The Interphone, Hardell and CERENAT studies show dose response relationships between mobile phone use and glioma (an aggressive form of brain cancer)
- Davis DL, Kesari S, Soskolne CL, Miller AB, Stein Y. (2013) and Morgan LL, Miller AB, Sasco A, Davis DL. (2015) concluded that the correct classification should be 2A – i.e. that Radiofrequency fields are a probable Human Carcinogen.
- The Precautionary Principle should be applied. Exposure to Radiofrequency fields should be reduced as far as possible, especially exposure to children.
- An opportunity to provide greater safety to the public has been missed.

Brain Cancer Epidemiology Studies since IARC Monograph 102 on Radiofrequency Fields

- Occupational (Cardis et al), 2013
- New Hardell, 2013, 2014
- French – Cerenat, 2014

Case Reports of Breast Cancer



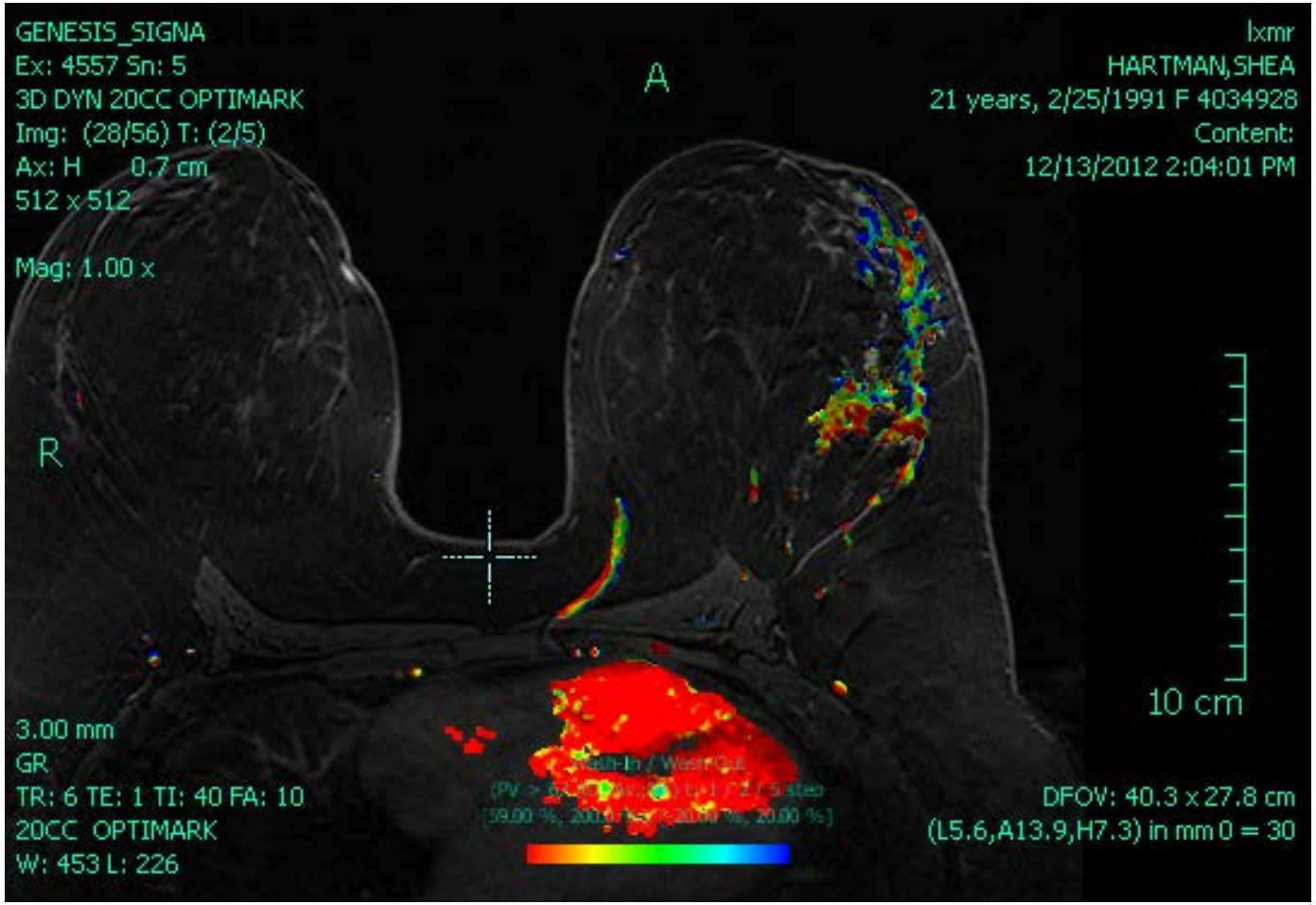
First case report,2009. Nagourney, MD, PhD

- Invasive multiple primary tumors in 34 year old woman, avid runner, used her cell phone 4 hours a day; stored in her bra for 10 years.

Eight more cases to date

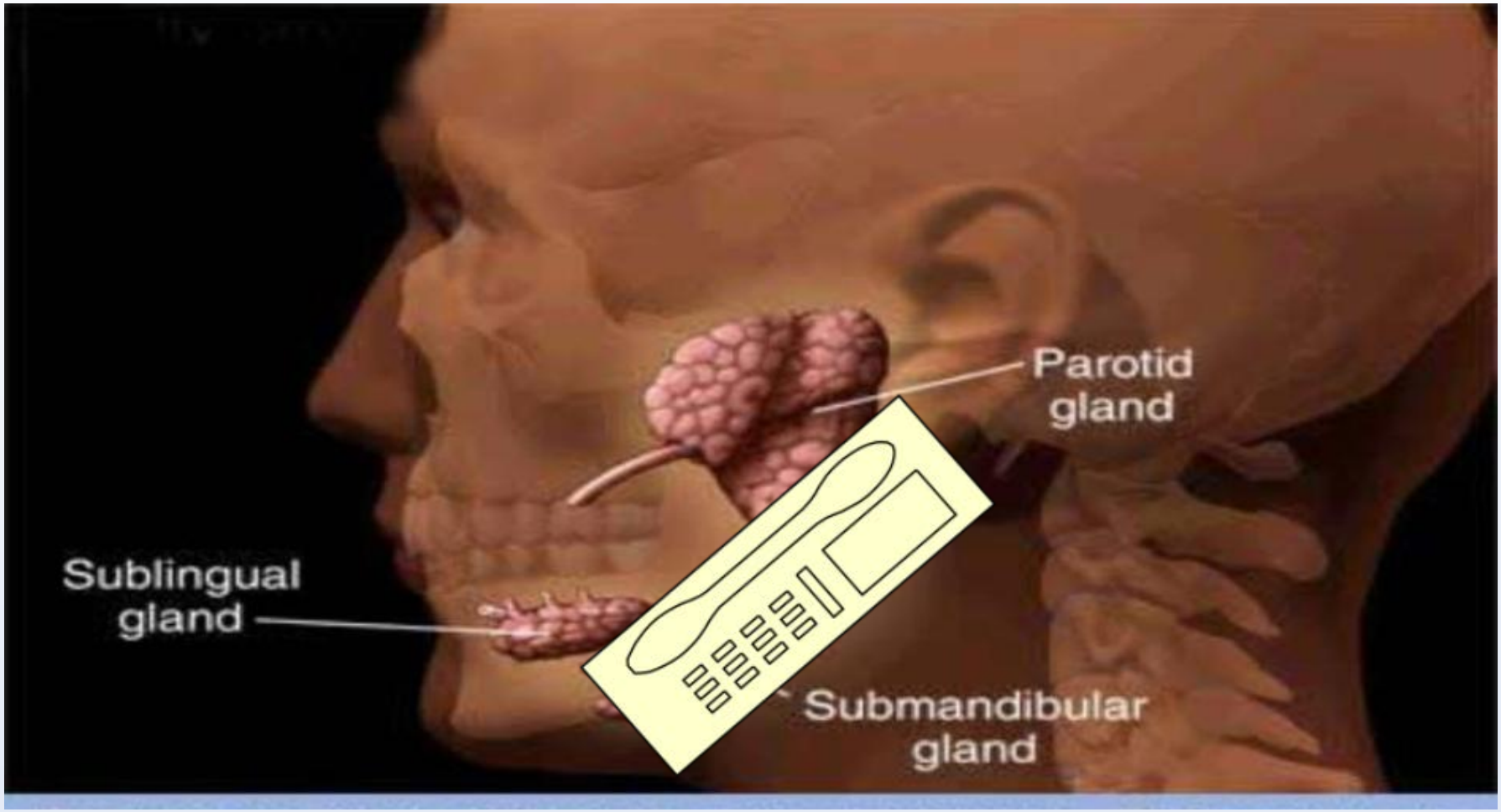
- BRCA1/2 negative; no family history or other risk factors
- Unusual location of multi-focal tumors where phones were kept with mix of tubular/solid patterns *of identical nuclear morphology & grade*
- Two with metastases

Case Report—21 yr old multi-focal tumors linked to cell phone kept in bra



Parotid or Salivary Gland Tumors Tripled in Israel:

1 in 5 under age 20



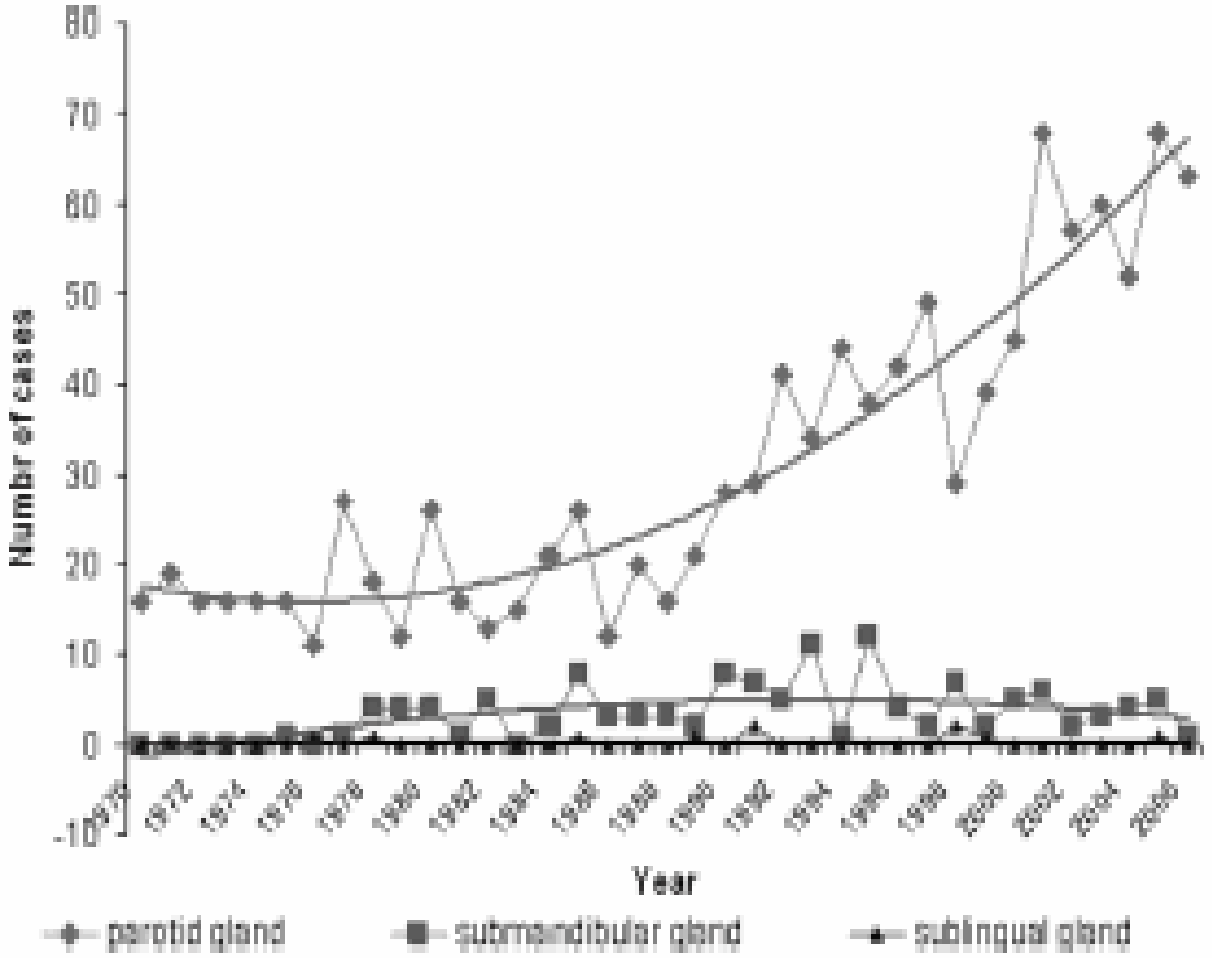


FIGURE. For trend analyses, we added regression lines and calculated R^2 values. Parotid gland cancer: $R^2 = 0.83$; Submandibular gland cancer: $R^2 = 0.36$; Sublingual gland cancer: $R^2 = 0.02$.

Source: Epidemiology, 22, p.130, *January 2011*

Conclusion on Israel study showing Association Between Tumors and Cell Phone Use

"Based on the largest number of benign [parotid gland tumors] patients reported to date, our results suggest an association between cellular phone use and PGTs (parotid gland tumors)."

The authors recommend continued research and implementation of precautionary measures by governments until further evidence becomes available.

Overall Conclusions

- Heath Canada failed to consider many studies showing harm under its “weight of evidence and “established health effects” criteria.
- Health Canada should investigate this new evidence, not ignore it
- Due to uncertainty, Health Canada leaves Safety Code 6 at the current levels.
- There is enough evidence to show the status quo is harmful.
- Multiple exposures from multiple sources increase risk from any carcinogen.
- Exposing Canadians to increasing levels of Radiofrequency Fields from multiple sources without them understanding the potential consequences is inappropriate and dangerous.
- There is no safe level of exposure to Radiofrequency Fields. Everyone should limit their exposure, whenever possible

Appendix

Cerenat – 231 cases, 446 control

Brain cancer	Exposure period	OR	95% CI
Glioma	After 2 years	2.89	1.41-5.93
	After 3 years	3.03	1.47-6.26
	After 5 years	5.3	2.1-13.23
Ipsilateral glioma	All	2.11	0.73-6.08
Meningioma	All	2.57	1.02-6.08

Reasons for deducing that radiofrequency fields is (an epigenetic) breast carcinogen

- Exposure Information
- In vitro toxicology
  - RFF stimulates apoptosis in normal fibroblasts
  - RFF impedes efficacy of tamoxifen
  - RFF interferes with melatonin
  - RFF is a xenoestrogen
- In vivo toxicology studies