



Health
Canada

Healthy Environments
and Consumer Safety
Branch

Santé
Canada

Direction générale,
Santé environnementale et
sécurité des consommateurs

Robert P Bradley
Director, Consumer & Clinical Radiation Protection Bureau
Health Canada
775 Brookfield Rd.
Ottawa, ON
K1A 1C1

Pim Vanderveen
Acting Director Program Operations Ontario region, Spectrum
Industry Canada
Spectrum Management - Regional Office
151 Yonge Street
Toronto, Ontario
Canada
M5C 2W7

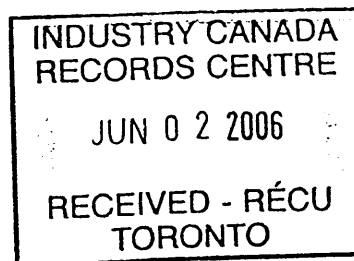
Dear Mr. Vanderveen,

As part of Health Canada's mandate to protect the health of the Canadian population from exposure to electromagnetic fields (EMFs), it publishes exposure guidelines, carries out laboratory research, participates in international standard setting bodies and continuously monitors external research in this area. The exposure guideline, "Safety Code 6 - Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz" was last revised in 1999. Prior to its publication, Safety Code 6 was reviewed by federal and provincial health authorities, as well as by a number of experts on the effects of electromagnetic radiation on human health. In addition, at the request of Health Canada, the Royal Society of Canada assembled an expert panel on radiofrequency (RF) fields to conduct an independent review of the guidelines for safe exposure limits set out in the Code. The report, which is available on the Society's Web site at www.rsc.ca/english/RFreport.html, concluded that the exposure limits set out in Safety Code 6 are adequate for the protection of the general public from adverse health effects. Subsequent to this review, several of the original panel members have undertaken two additional reviews each time looking at the literature published in consecutive two year periods. In both cases, there was no new information published that caused them to change their original assessment.

In addition to periodic external reviews of the code by the Royal Society of Canada Expert Panel, scientists at Health Canada continuously review new research findings published in the peer-reviewed literature as they become available. It should be emphasized that the source of this peer-reviewed literature is from established scientific journals whose peer-review panels are

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experts in this field and from authors with a demonstrated ability to carry out quality research. Information published without peer review or in nonspecialist journals (i.e. the internet) carry much less weight simply because there is no way to establish the quality of the work. It should also be emphasized that no single study is used as a basis for deciding the limits in the code but rather the whole body of evidence contained in the literature. It is well known that even amongst the body of peer-reviewed literature there is a range of quality and therefore each manuscript must be judged on its own merits.

Even with this ongoing, rigorous review of the code, no new information has arisen that would, in the opinion of Health Canada scientists, make the code obsolete. Despite this, Safety Code 6 will be officially reviewed in the future as are all of Health Canada's safety codes which undergo periodic review and re-issuance. Since there are several other safety codes in the process of revision, no time frame has yet been established for the next round of review of Safety Code 6.

In terms of the exposure limits in Safety Code 6, Health Canada takes into account all biological effects whether thermal or non-thermal. The popular view that the code limits are based entirely on heating effects of EMFs is only somewhat valid. Non-thermal effects such as cancer initiation and promotion are not established. The body of peer-reviewed literature in this area is overwhelmingly negative and where the few reports of positive effects are found, some can be attributed to thermal confounding. Other non-thermal effects such as blood brain barrier effects and melatonin effects are difficult to replicate. The more established non-thermal effects such as calcium efflux effects are considered to be more of a biological response than an adverse health effect. In much of this research, especially that conducted many decades ago, thermal confounding may have been a factor since only in the last decade has energy deposition and thermal control of RF exposed biological samples been fully understood.

In deriving the exposure limits for Safety Code 6, Health Canada only utilizes scientifically justifiable health-effect thresholds that are well established. These include things like slight temperature rises in test subjects and behavioural changes in lab animals. These same thresholds are used by a number of other jurisdictions such as the United States and the European Economic Community in the setting of their respective exposure limits.



Artnarong Thansandote

Chief, Electromagnetics Division, Consumer & Clinical Radiation Protection Bureau

for Robert P. Bradley,
Director, Consumer & Clinical Radiation Protection Bureau