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Submitted via email (safetycode6codedesecurite6@hc-sc.gc.ca)

July 15, 2014

Consumer and Clinical Radiation Protection Bureau
Environmental and Radiation Health Sciences Directorate
Healthy Environments and Consumer Safety Branch
Health Canada

Re: ***Health Canada's Consultation on Safety Code 6: Limits of Human Exposure to Radiofrequency Electromagnetic Energy in the Frequency Range from 3 kHz to 300 GHz (2014)***

Dear Sir/Madam:

The Telecommunications Industry Association[1] ("TIA") submits these comments to Health Canada in response to its proposed changes to Safety Code 6 ("SC6").[2] TIA is a global trade association based in Washington, DC which represents approximately 400 global information and communications technology ("ICT") manufacturers, vendors, and suppliers. TIA's member companies manufacture or supply the products and services used in global communications across all technology platforms, including broadband, mobile wireless, information technology, networks, cable, satellite, and unified communications. Members' products and services empower communications in every industry and market, including healthcare, education, security, public safety, transportation, government, the military, the environment, and entertainment. TIA is also accredited by the American National Standards Institute to develop standards for the telecommunications space. For more information, we

[1] *See* http://tiaonline.org/.

[2] Health Canada, *Proposed Safety Code 6 Limits of Human Exposure to Radiofrequency Electromagnetic Energy in the Frequency Range from 3 kHz to 300 GHz* (2014).

urge you to view TIA's Policy Playbook,[3] which provides further information on TIA, an overview of the ICT market, technologies, and policy recommendations to drive innovation and investment in the ICT field.

In our comments below:

- TIA supports all proposed changes to Safety Code 6 that would be harmonized with the limits from the International Commission on Non-Ionizing Radiation Protection (ICNIRP) and the Institute of Electrical and Electronics Engineers' (IEEE) C95.1-2005. The benefits of globally-harmonized standards touch all stakeholders: industry, governments, and—most importantly—consumers.

- TIA recommends that Health Canada provide clarity regarding the ability to average over 6 minutes with Section 2 of the proposed Safety Code 6.

- TIA notes that it has concern with Health Canada's proposal to retain a specific absorption rate of 1.6 W/kg 1g for some values in Table 2 of the proposed Safety Code 6, which are inconsistent with the ICNIRP and IEEE levels. We urge for Health Canada to update its limits consistent with international standards in Table 2 entirely.

- TIA recommends that Health Canada globally harmonize its exposure limits in Tables 5 and 6 of Safety Code 6. We urge Health Canada to avoid creating separate requirements in this matter that would ignore global standards already widely in use.

[3] *See* http://tiaonline.org/PDF/9603_FinalProof_LoRes.pdf.

I. TIA Supports Health Canada's Proposal to Harmonize Safety Code 6 with Widely-Used International Standards

First, we note that TIA supports all proposed changes to SC6 that would be harmonized with the limits from the International Commission on Non-Ionizing Radiation Protection[4] ("ICNIRP") and the Institute of Electrical and Electronics Engineers' ("IEEE") C95.1-2005.[5] The benefits of globally-harmonized standards touch all stakeholders: industry, governments, and—most importantly—consumers.

The INCIRP and IEEE standards draw on deep international expertise and experience. They are, therefore, a vital resource for governments developing regulations. International harmonization of the standard would provide societal benefits by facilitating international cooperation and enabling interoperability, which will open up trade. TIA members are major importers and exporters of radio frequency ("RF")-emitting equipment. Requiring manufacturers to comply with differing sets of standards around the world creates potential barriers to trade in the ICT equipment market, particularly for small businesses. Harmonization would remove unnecessary trade barriers and open up global markets. A harmonized and consistent approach has benefits in terms of protection and trade. TIA believes that globally harmonizing standards promotes the "build once, test once, sell everywhere" effect, resulting in improved time-to-market and reduced costs to consumers.

Harmonizing SC6 with the worldwide standards for exposure also avoids the inaccurate message that Canada needs a stricter standard than other countries. Such a message creates confusion, undermines public confidence in the safety of the technology, and is unnecessary.

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[4] *See* International Commission on Non-Ionizing Radiation Protection (ICNIRP), Exposure to high frequency electromagnetic fields, biological effects and health consequences (100 kHz -300 GHz), 2009 (ICNIRP 2009) at 321.

[5] *See* Institute of Electrical and Electronics Engineers, Inc., *IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz*, IEEE Std C95.1-2005, copyright 2006 by the Institute of Electrical and Electronics Engineers, Inc. (IEEE), New York, New York 10016-5997.

Therefore, TIA supports Health Canada harmonizing its exposure levels with the widely-accepted international standards from ICNIRP and IEEE.

II. TIA Urges Health Canada to Provide Clarity Regarding the Ability to Average Over 6 Minutes to Comply with Section 2

TIA appreciates that Health Canada provides the ability to average over 6 minutes to demonstrate compliance in Section 2. TIA recommends revising the following sentence to limit potential confusion, i.e., "For these situations, the RF exposure averaged over any one tenth-hour reference period (6 minutes) shall not exceed the limits outlined in Sections 2.1 and 2.2 ."

III. TIA Urges Reconsideration of Health Canada's Proposal to Retain the 1.6 W/kg 1g Specific Absorption Rate Limits

TIA wishes to raise concern with Health Canada's proposal to retain the specific absorption rate ("SAR") of 1.6 W/kg 1g for some values in Table 2 of the proposed SC6, which are inconsistent with the ICNIRP and IEEE levels. In addition, Health Canada does not provide a rationale for why it would update its limits consistent with international standards elsewhere in Table 2, yet retain the outdated head, neck, and trunk SAR limits of 1.6 W/kg 1g in uncontrolled environments and 8 W/kg 1g SAR in controlled environments. There are several compelling reasons that we believe should convince Health Canada to fully harmonize Table 2 with the ICNIRP and IEEE:

- A very recent study by the Royal Society of Canada Expert Panel that specifically addressed SC6 found "no new adverse health effects" having been established in the 10 MHz-6 KHz range.[6]

[6] Demers, Paul (chair), Richard Findlay, Kenneth R. Foster, Bryan Kolb, John Moulder, Anne-Marie Nicol, Frank Prato, Rianne Stam. (2014). Expert Panel Report on A Review of Safety Code 6 (2013): Health Canada's Safety Limits for Exposure to Radiofrequency Fields. Royal Society of Canada, Ottawa, ON. ISBN: 978-1-928140-00-9, p.15.

- Health Canada itself states in its related discussion paper that its scientific approach is comparable to that employed by other science-based international standards bodies; nonetheless, its proposal in the draft SC6 to apply the 1.6 W/kg 1g SAR limit to the head, neck, and truck would be inconsistent with the use of the 2 W/kg 10g averaging limit employed by 150 jurisdictions globally, with Canada and just a few other countries continuing to use the outdated 1.6 W/kg 1g standard.[7] We note initially that both the highly-regarded ICNIRP and the IEEE C95.1 2005 committees have reviewed the most recently-available scientific data and have found that the localized SAR threshold for an adverse health effect is 100 W/kg averaged over 10 grams of tissue. This is 50 times higher than the ICNIRP or IEEE standard of 2.0 W/kg averaged over 10 grams.
- The 1.6 W/kg 1g standard relies on scientific data collected in the 1970's on which the 1991 version of the IEEE standard was created, which is now two iterations old. In addition, the current IEEE standard specifically explains that improved scientific understanding and dosimetry refinements (the reason provided for retaining the older limit by Health Canada) more than adequately justify the shift from the 1.6 W/kg 1g standard to the 2.0 W/kg 1g standard.[8]
- The international community agrees that there is no credible evidence of health effects from RF radiation within the ICNIRP guidelines. The World Health Organization ("WHO") has stated as recently as 2011 that "[a] large number of studies have been performed over the last two decades to assess whether mobile phones pose a potential health risk. To date, no adverse health effects have been established as being caused by mobile phone use."[9] Other worldwide health and safety organizations in countries that have adopted the ICNIRP standard are in accord.[10]

Based on the above, we strongly urge for Health Canada to fully harmonize Table 2 with the ICNIRP and IEEE.

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[7] *See* Rowley J., Joyner K., Zollman P. & Larsson LE. Radiofrequency Exposure Policies Relevant to Mobile Communication Devices and Antenna Sites. BioEM 2013, 10-14 June Thessaloniki Greece.

[8] *See* IEEE C95.1-2005 at Appendix C, Section C.2.2.2.1.

[9] *See* WHO, *Electromagnetic Fields and Public Health: Mobile Phones, Fact Sheet 193* (June 2011), *available at* http://www.who.int/mediacentre/factsheets/fs193/en.

[10] We refer Health Canada to recent comments from TIA to the United States' Federal Communications Commission for an extensive list of determinations from across the globe. *See* Comments of TIA, ET Docket Nos. 13-84 & 03-137 (filed Sept. 3, 2013), *available at* http://www.tiaonline.org/sites/default/files/pages/TIA_Comment-RF_Exposure_FNPRM_NOI_13-84_03-137.pdf.

IV. TIA Urges Reconsideration of Health Canada's Changes to Reference Levels in Tables 5 and 6 of the Proposed Safety Code 6

Health Canada also proposes to change reference levels in Tables 5 (uncontrolled environments) and 6 (controlled environments), lowering these reference levels for electric field strength, magnetic field strength, and power density between 300 MHz and 6 GHz based on several studies on dosimetrics that have been released since SC6 was last updated in 2009. TIA does not believe that these scientific analyses sufficiently justify the proposal to lower these reference levels because the studies cited only show a feasible circumstance where the reference limits would be exceeded below approximately 200 MHz and above 2 GHz. TIA defers to the technical comparisons submitted in this matter by the Mobile Manufacturers Forum to illustrate that the reductions proposed by Health Canada do not align with the globally-accepted ICNIRP standard's approach.

Consistent with TIA's positions above, we strongly urge Health Canada to instead take this opportunity to globally harmonize its exposure limits in SC6. Canada should avoid creating separate requirements in this matter that would ignore the standards widely used across the globe, which take into account not only the practicality and likelihood of these "worst case" scenarios[11] as well as the fact that IEEE and ICNIRP standards have been determined by the expert groups that developed them and by independent expert panels to provide a substantial margin of safety—up to fifty-fold—for users of consumer RF devices.[12] Further, other studies cited by Health Canada in their proposed revision of SC6 are sufficient only for far-field conditions as they were determined for plane wave exposure; as a result their application to near-field results in an inaccurately high result. Some of the reference levels proposed are upwards of 60% of the existing limits that are employed by RF-emitting communications equipment in Canada.

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[11] *See* ICNIRP statement on the "Guidelines for limiting exposure to time-varying electric, magnetic, and electromagnetic fields (up to 300 GHz)", Health Physics 97(3):257-258; 2009.

[12] *See, e.g.*, IEEE Standards Coordinating Committee 28 on Non-Ionizing Radiation Hazards, "IEEE Standard for Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 400 GHz," at 28 (Sept. 26, 1991).

Aside from the negative trade effects TIA has described above that would result from Canada refusing to globally harmonize its approach, this approach would additionally create impediments to the deployment of wireless communications infrastructure as it would expand the compliance boundary around base stations. This would in turn reduce the ability of for site-sharing and, in cases where a base station's compliance boundary increases into a building, would require a reduction in power and less effective coverage. Similarly, the same issues would arise for towers that have multiple tenants whose antennas would combine to expand the compliance boundary. The increased costs may be most acute for networks already established which would be required to fill in new resulting coverage gaps at great expense.

Based on the above, we strongly urge Health Canada to harmonize its reference levels in Tables 5 (uncontrolled environments) and 6 (controlled environments) with the IEEE.

V. Conclusion

We strongly encourage Health Canada to consider the views above, and to contact the undersigned with any questions or concerns.

Respectfully submitted,

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