

M. HAVAS, ATTACHMENT # 1

REPORT NO. BF-I-7
FEBRUARY 9, 2011

TO: The Chairperson and Members of the
Business and Facilities Standing Committee

FROM: Superintendent of Education

SUBJECT: **USE OF WIRELESS TECHNOLOGY**

1. **Background**

Our goal is to provide safe, supportive environments for all students and staff. Wireless communications are recognized to be a relatively new technology in use in our schools, and ensuring the responsible use of this technology is important. Supporting our risk management strategy the Simcoe County District School Board (SCDSB) has been very active ensuring that the wireless communications devices in all of our facilities meet or exceed the standards set by all regulating authorities.

The Board has sought information regarding this matter from a number of governmental bodies, including the federal and provincial Ministries of Health, Ontario's Ministry of Education, the Ontario Agency for Health Protection and Promotion (OAHPP), Ontario's Chief Medical Officer of Health, and the Simcoe Muskoka District Health Unit. These authorities have supported the position that wireless communication in our schools is safe, and that it does not pose a risk to student or staff health. This position is supported internationally as well through other governmental agencies and the World Health Organizations. Health Canada and Industry Canada have also been consulted and verify that wireless communications are safe. The SCDSB has information from these organizations on its website at:

<http://scdsb.on.ca/programs-services/information-and-communication-technology/>

In November 2010, the SCDSB also sought testing of the wireless communications system by an outside expert, Dr. Tony Muc, President and Chief Physicist Radiation Health and Safety Consulting, and a former Assistant Professor and now an Adjunct Lecturer at the Dalla Lana School of Public Health Occupational & Environmental Health Division, University of Toronto, to confirm that the wireless communication access points employed by the Board were in keeping with the guidelines of Health Canada, and Industry Canada. The report attached is the result of this investigation (APPENDIX A).

Dr. Tony Muc was asked to evaluate and measure the levels of electro magnetic radiation emitted by the access points at two schools, Mountain View Elementary School, and Collingwood Collegiate Institute (CCI), both located in the town of Collingwood. Dr. Muc had been enlisted to present to the Board of Trustees the scientific basis of wireless communications at the April 21, 2010 Facilities Standing Committee meeting of the SCDSB. Dr. Muc's experience with the development and understanding of Safety Code 6, the regulation that governs the levels that are acceptable for exposure, qualifies Dr. Muc as an expert in the field.

2. Wireless Communications

The Simcoe County District School Board (SCDSB) has been recognized as a leader in Ontario in the development and implementation of wireless computer networks in our schools. At this time we have wireless capabilities available in all of our facilities supporting the principles of the SCDSB Information and Communication Technology (ICT) Strategic Plan (2009) that include the provision of equity and accessibility to technology in our schools.

Wireless communications (commonly referred to as WiFi) allow staff members and students to access the Internet through portable devices in virtually any setting. Wireless promotes the use of technology by making technology available for the teacher and the learner in all locations, for small and large groups and with flexibility in groupings and subject areas.

WiFi enabled devices (laptops, Teacher Notebooks, blackberries) connect to the Internet and the SCDSB Intranet through access points located in buildings to provide coverage and connectivity for all users. The link is made between the computing device and the access point (also known as a router) as a signal is sent, and information goes to the device from the access point.

In the SCDSB the establishment of the wireless network has positioned the Board well to take advantage of the many positive outcomes for students and staff in the area referred to as 21st century teaching and learning.

3. Status of Wireless Projects in the SCDSB

The SCDSB is completing the final phase of implementation so technology is available in every room and every teaching and learning area in the Board as portable classrooms are connected through access points to the Board's network. The implementation of wireless access points began in 2006 and a full scale implementation was undertaken soon thereafter. It was completed in 2009. Access is close to being universal in our buildings for all Board-owned devices.

Guest wireless for teaching staff was piloted in two secondary schools, Elmvale District High School and Eastview Secondary School, in the 2009-2010 school year. Full availability of the Guest Wireless network for staff was begun in November 2010. The Guest Wireless network allows staff to bring non-Board owned devices to locations, allowing the staff members to use their own devices to access the Internet. Staff members are expected to complete an Acceptable Use agreement in order to use the Guest Wireless network, which is filtered at the lowest level of access for security purposes. Guest Wireless does not allow staff to use the Board's network.

Student Guest Wireless is in the pilot stage with three secondary schools, and two elementary schools beginning implementation in March 2011. Student Guest Wireless will require student and parent permission and agreement so that the students may bring in their own electronic devices. Filtering is to be in place at a stringent level to support the acceptable use of these devices. Following the pilot of Student Guest Wireless it is intended that full implementation will proceed in the 2011-2012 school year. This will provide students at SCDSB schools with access to the Internet when they are at SCDSB facilities, while maintaining the security of the Board network and Intranet.

4. Report from Dr. Muc

The report from Dr. Muc was presented to staff in late December 2010, following his visits to the schools on November 25th, 2010.

Following receipt of the report, staff requested that Dr. Muc answer the questions found below for the purposes of clarification.

QUESTION: What is the level of mW/ cm² that is set under Safety code 6 for exposure for those not 'classed as RF and Microwave Exposed Workers (including the General Public)'? The challenge for us to understand how the levels relate to the acceptable if we do not know what the lowest level of 'unacceptable' readings are.

RESPONSE: For WiFi signals any level UP TO 1 mW/cm² averaged over any 6 min period is acceptable. So, arguably, 1.00.....001 mW/cm² and any greater level would be unacceptable.

QUESTION: In section 4.2 the report states that the reading at location #1 at Mountain View, on Hollinger's laptop is referenced at 1.342 mW/cm². Can you relay to me what that means with regard to exposure since in 4.3 the levels below 1 that you mention are 'acceptable'?

RESPONSE: The level observed at Hollinger's laptop would be unacceptable if it were to be accessed in some significant way for more than about 4.5 minutes at a time. However, one would have to wear the computer like a hat to actually be "exposed" to the observed level, an exceedingly extraordinary way to use the computer. Other measurements verified that at locations where a normal user would normally be [head and hands] the levels were well below 1mW/cm².

QUESTION: Do you have a layperson's explanation as to why the level in that location (on the laptop) was so far removed from all other values recorded?

RESPONSE: Perhaps a red hot stove element might serve as an example. Direct contact will produce a severe burn in a very short time. Coming as close as, say, 1 mm for several minutes will also produce a burn, but not likely as severe. Being as close as 10 cm would not likely produce a burn at all though warmth might be sensed and being farther away (walking around in the kitchen), even though "exposure" (at a very low level) still exists does not produce any discernible effect. The specific location on the laptop where the relatively high level was observed represents what is often called a "hot" spot - like the red hot stove element. It may be where the laptop's antenna is mounted or perhaps close to the CPU is mounted or where a particularly active data bus passes.

QUESTION: What would that mean as far as exposure for a student sitting at that computer?

RESPONSE: To use the red hot stove element analogy, the student is walking around in the kitchen - far enough from the hot spot to be out of harmis way.

QUESTION: In section 4.2 the level is said to drop off from the high registered to below the detection level and to ND in a very short distance. In the paragraph above this statement it is stated that the meter's calibrated measurement limit is 0.040 mW/cm² (How was the 1.342 reading measured if the limit is 0.040?).

RESPONSE: By way of clarification it would be preferable to say the lower limit of the meter's calibrated measurement RANGE is 0.040 mW/cm². The upper limit is something like 1999 mW/cm² (I would have to get the meter and its manual back to check the actual value). The 1.342 reading is WITHIN the calibrated measurement range. Many readings, even most readings in some situations, are less than 0.040. Such readings represent a response of the meter but the value may be off by a much larger percentage than values within the calibrated range. The meter's display may show a reading as low as 0.001 or even 0.000. In principle the percentage error (uncertainty) of the latter is infinite!

The measurement of power densities in the report is in mW / cm² – microwatt per square centimeter. A microwatt is a 1000th of a watt.

Dr. Muc's findings were consistent with the safety levels that we expect for all of our students and staff. All were found to be well within the safety standards prescribed by Health Canada's Safety Code 6.

Other school boards in Canada, including the Bluewater District School Board, have commissioned or conducted tests of wireless installations in the interest of demonstrating that there is no risk to student health. The levels found at the schools in Bluewater DSB were also found to be well within the range found by Dr. Muc during his investigation in SCDSB schools, and can be found on their website (<http://www.bwdsb.on.ca/>).

5. Conclusions

The SCDSB continues to communicate with staff, parents and the wider community about the benefits of the technological innovations that are important aspects of the move to 21st century teaching and learning in our schools.

The wireless communication system established in the SCDSB has, throughout the tests completed by Dr. Muc, demonstrated that the wireless access points are safe and pose no health risk to our students and staff. The findings of Dr. Muc's report validate the position of the Board that wireless communications and devices are an important element in our information and communications technology strategy.

The importance of the use of technology in our schools is significant in our agenda to advance student learning. It is also important for the SCDSB to provide safe and supportive environments for all of our students, our staff and our community. The report from Dr. Muc reinforces that the wireless technology in use in the SCDSB is safe.

6. Report Status

This report is provided for information.

Respectfully submitted by:
John Dance

Superintendent of Education

February 9, 2011

