

# TORONTO STAFF REPORT

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September 2, 2003

To: Board of Health

From: Dr. Sheela V. Basrur, Medical Officer of Health

Subject: Effects of Caffeine on Children's Health and Promoting Healthy Eating in Toronto schools

## Purpose:

To respond to the request from the Board of Health to report on the potential harmful effect of caffeine on children and any actions the Board could take to address this issue. In addition, this report highlights issues regarding food choices available in Toronto schools.

## Financial Implications and Impact Statement:

There are no financial implications resulting from the adoption of this report.

## Recommendations:

It is recommended that:

- (1) the Board of Health advocate to the Ontario Ministry of Education and Training that regulations be formulated to specify what foods are to be available to children in schools to support healthy eating;
- (2) the Board of Health advocate to the Ontario Ministry of Education and Training, the Toronto District School Board, the Toronto Catholic District School Board, le Conseil scolaire de district du Centre-Sud-Ouest (French Public school board) and le Conseil scolaire de district catholique Centre-Sud (French Catholic school board) to establish healthy eating policies in schools;
- (3) this report be forwarded for information and appropriate action to City of Toronto Parks and Recreation and Children's Services Divisions as well as to the Toronto District School Board, the Toronto Catholic District School Board, le Conseil scolaire de district du Centre-Sud-Ouest and le Conseil scolaire de district catholique Centre-Sud, and the Toronto Food Policy Council;

- (4) the Board of Health request the Ontario Public Health Association (OPHA) to lead a consultation with the support of Toronto Public Health and other key stakeholders, to develop recommendations on foods offered to children in schools for consideration by the Ontario Ministry of Education and Training; and
- (5) the appropriate City Officials be authorized and directed to take the necessary action to give effect thereto.

Background:

At its meeting on January 27, 2003, the Board of Health considered the minutes of the North York Local Health Committee from its meeting held on November 26, 2002, as well as communications from the Chair and a member of the North York Local Health Committee. This resulted in a request from the Board of Health, that the Medical Officer of Health report on the potential harmful effects of caffeine on children. In addition, the Board requested suggestions for ways this issue could be addressed, and to highlight actions taken by authorities in California.

In preparing this report, Toronto Public Health staff consulted with representatives of the Toronto District School Board, Toronto Catholic District School Board and City staff. In addition, Health Canada has recently undertaken a review of numerous studies regarding caffeine and its potential effects on humans. The summary results and recommendations from this review will be highlighted in this report.

Comments:

Effects of Caffeine Consumption:

Canada's Guidelines to Healthy Eating advises Canadians to limit their caffeine intake and has established specific guidelines according to age group (See Appendix 1) (1). Previously, Health Canada had only indicated that for adults, levels of up to 400 – 450 mg caffeine per day are not hazardous to health. This amount is equivalent to approximately four cups of coffee.

Health Canada has recently undertaken a review of numerous studies of caffeine and its potential health effects. The review conducted by Nawrot et al. in 2003 reconfirmed that the current recommended maximum of 400 – 450 mg of caffeine per day in the average adult has no associated adverse impacts such as cardiovascular effects, changes in behaviour, increased incidence of cancer or effects on male fertility (2). In addition, moderate caffeine intake does not adversely affect bone status and/or calcium status if adequate intakes of calcium are being consumed. Results of studies were inconsistent with respect to mood or performance effects, as there were individual differences in sensitivity to caffeine. Research has shown that some sensitive individuals experience side effects such as insomnia, headaches, irritability and nervousness.

Research has shown that children may be at greater risk of altered behaviour, such as anxiety, (Nawrot et al. 2003), and that caffeine can produce these effects at low levels. The authors also

note that since children's nervous systems are continually developing and since there is a lack of information regarding the long-term effects of caffeine in children, a cautious approach is warranted. Thus, Health Canada has developed an additional guideline of a maximum 2.5 mg caffeine per kg body weight per day for children (see Appendix I) (3).

#### Current Access to Caffeinated Products by Children in the City of Toronto:

Caffeine is a natural alkaloid found in coffee beans, tea leaves, cocoa beans, cola nuts and other plants. It is also found in medications including headache or pain remedies and over-the-counter stimulants.

The lack of national or provincial food and nutrition surveillance systems in Canada means there is a major gap in information on the dietary and caffeine intake of children. Since caffeine is available in cola beverages, chocolate candies and iced tea, access to these products by children may be an indicator of caffeine consumption. Children may have access to these products at home, at school or at public places such as community centres.

Children spend a large part of their day at school. In schools, they are exposed to many different influences, primarily their peers and teachers, when it comes to making food choices. The availability of foods at a school can therefore have a direct impact on the choices children make. Many schools have vending machines, informal snack shops or cafeterias.

The Toronto District School Board (TDSB), provides access to caffeinated beverages according to grade levels of students (4). In elementary schools (Grades JK – 5), at the TDSB, no caffeinated beverages are sold and only water and juice blends (greater than 25% pure juice content) are allowed. Similarly, in middle or senior public schools (Grades 6 – 8), vending machines can dispense water or juice blends only, unless both the parent council and the principal approve the installation of a soda vending machine. At the secondary school level, the principal has the authority to install a vending machine, although most of these schools also have full-service cafeterias or contracts with food service operators. Few schools ban beverages, as the TDSB focuses on offering balanced choices. Instead, since school staff have noted that students in middle and secondary grades will go out into the community to purchase their beverage choices, a choice of beverages is usually available on school property. The number one selling vending beverage in TDSB schools is iced tea followed by bottled water (4). The Toronto Catholic District School Board (TCDSB) takes a similar approach (5). Most elementary schools offer water and juice blends only, although there are a few that offer soda beverages.

Both the TDSB and the TCDSB have exclusive contracts with a beverage company which produces cola and iced tea beverages. Therefore, in both middle schools and secondary schools where soda vending machines have been installed, with principal and/or parental approval, students as young as 12 years of age, may have access to both cola and iced tea beverages. Both of these products contain caffeine at approximately 36 to 46 mg per 355 mL of cola and 13 to 30 mg per 355 mL of iced tea depending on the brand (6). This is about one third to one half of the maximum recommended intake of caffeine for 10 to 12 year olds (85 mg/day) (see Appendix I). Other caffeinated foods such as chocolates are more difficult to track in schools, as these are often sold in snack shops or used in fundraisers. However, caffeine can vary in chocolate

products anywhere from 3 – 20 mg per 56 g of milk chocolate, to 40 – 50 mg per 56 g of dark chocolate.

#### Impact of Foods with Caffeine on Nutrient Intake:

Colas, iced teas and chocolates belong to the “Other Foods” category of Canada’s Food Guide to Healthy Eating because they contain high levels of calories and/or fat, and very few other nutrients. Indeed, the caloric value is high for both beverages: approximately 150 calories and 38 grams of sugar per 355 mL of cola, while iced tea has approximately 125 calories and 31 grams of sugar per 355 mL. Similarly, chocolate can contain approximately 225 calories and 13 grams of fat per bar (7). Thus, a more alarming concern of caffeinated foods and beverages is that they may be displacing foods and beverages of higher nutritive value in a child’s diet and contributing to poor nutrition.

The consequences of poor nutrition during childhood and its long-term implications cannot be overstated. Establishing healthy eating patterns in childhood has long-term implications with respect to the prevention of diet-related diseases such as heart disease, cancer and osteoporosis. Excessive intakes of sugary and high fat products can increase a child’s risk for obesity. Girls are at risk for osteoporosis due to inadequate calcium intake. Consumption of “Other Foods” such as colas, iced tea and chocolates may be displacing other food and beverages of higher nutritive value such as milk products and vegetables and fruit. A study by Evers et al. 2001, reported that 31.5% of Ontario students in grades 4 – 8 consume regular soft drinks daily and for those that ate breakfast less than daily (or never), the number rises to 41.6% (8). There is a new Dietary Reference Intakes recommendation of maximal intake of 25% of calories from “Added Sugar”. Research has found that intake of added sugars above this level significantly reduces intakes of micronutrients (9). The World Health Organization also recommends limiting consumption of added or free sugars, with a limit of 10% of calories from “Free Sugars” (10). These new recommendations further support the need to limit intake from “Other Foods” beyond the potential effects of caffeine. Research has shown that Canadian children aged 7 to 13 years are becoming progressively overweight and obese, highlighting the need to promote healthy eating and healthy weights to school-aged children (11).

#### Promoting Healthy Eating to School-Aged Children in Toronto:

Toronto Public Health’s approach to this issue has been to support schools in creating environments where the overall school setting actively promotes healthy food choices to students and staff.

The school curriculum is a good starting point for children to learn about nutrition and healthy food choices. However, studies suggest that knowledge alone does not result in children making healthy food choices. The school community can take action to reinforce the positive messages of the health curriculum. Toronto Public Health is currently offering a tool kit called “Action Towards Healthy Eating in Toronto Schools”, which was sent to 140 elementary schools in 2002. This tool kit provides ideas and resources to help schools assess their eating environment and to make changes that will support students and staff in making healthy eating choices. Some examples of ideas for schools include alternatives to chocolate sales as fundraisers and sample

guidelines for foods that could be offered in the school setting. Public health staff are available to support schools in implementing activities that promote healthy eating.

Toronto Public Health also influences foods offered in the school setting through its support of student nutrition programs. One hundred and thirty-two elementary and middle schools in Toronto provide universal snack programs to their students. These programs model healthy food choices on a daily basis. Snacks are served to all students in the classroom, encouraging participation by all students and acceptance of the healthy choices offered. Students are offered choices from a minimum of two food groups for the snack, with an emphasis on vegetables and fruit, grain products and milk products or other non-dairy sources of calcium. Toronto Public Health ensures quality nutritious foods are served through detailed nutrition standards required for City funding, annual site visits to programs by Registered Dietitians and ongoing nutrition and healthy eating workshops for volunteers and staff. These student nutrition programs operate with funding from parents, local fundraising and subsidies (partial funding) from the City of Toronto and the Province of Ontario. Additional student nutrition programs serve breakfast, lunch and after school snacks in many school/community sites across the City; however, most attract fewer participants than the universal snack programs.

In addition, Toronto Public Health and City of Toronto Parks and Recreation have been working together to include healthy eating guidelines for the food offered in community centres. During the last Request for Proposal (RFP) for vendors in the East and West regions, a healthy eating consideration was added as a criterion for the proposals. Vendors were encouraged to provide healthy eating choices in addition to traditional tuck shop items.

Other Jurisdictions:

On August 27, 2002, the Los Angeles Unified School District Board (LAUSD) unanimously voted to ban soft drinks in all LAUSD schools, beginning January 2004. The LAUSD soda ban received national press coverage, as it will impact 736,675 students. However, Los Angeles is only the latest in a series of school boards to limit and/or eliminate sodas and other less nutrient dense food and beverages. Other school boards that have taken action include California's Folsom Cordova, Capistrano, Newport-Mesa and Oakland Unified districts as well as Uinta County in Wyoming (8).

The Center for Food and Justice at Occidental College reported that the Los Angeles soda resolution came about as a result of a number of factors (8). They included a strong community, teacher, and parent input as well as a large organizing campaign launched by a coalition of community food advocates. There was also strong advocacy by LAUSD board members and LAUSD staff support for the ban, given growing concern that the constant availability and consumption of high sugar and highly caffeinated soft drinks contributes to significant adverse health and learning impacts(8). Efforts to improve the foods and beverages offered in schools continue in other American jurisdictions. (9).

### Consultation on Promoting Healthy Food Choices in Schools:

Decisions on what food and beverages are available in schools are under the authority of individual school boards, which follow the Education Act for guidance. Advocating for provincial regulations would set a standard for the food choices offered in Toronto schools and promote healthy eating. It is also recognized that school communities differ and needs of students may vary from community to community. Healthy eating should be promoted in a positive way so children and youth can make healthy eating choices throughout their lives. Through consultation with school boards and other key stakeholders, policies from the Ministry of Education and Training for food and beverages available in schools, could still allow school communities to meet their own local needs without exposing children to caffeine and other high caloric foods and beverages.

As well as promoting healthy eating, creating environments that support children in making healthy food choices would be one component in a comprehensive strategy promoting healthy weights to children. As a first step, Toronto Public Health is proposing that OPHA take the lead in a consultation process with key stakeholders including local school boards, appropriate City departments, local Boards of Health in Ontario, the Ontario Society of Nutrition Professionals in Public Health, and the Ontario Healthy Schools Coalition to bring a broad public health perspective on foods offered to children in schools. The results and recommendations emerging from this consultation would be forwarded to the Ontario Ministry of Education.

### Conclusions:

There is limited dietary information about children living in the City of Toronto, due to the lack of provincial or federal surveillance systems. However, given the new Health Canada caffeine recommendations and the long-term effects of excessive caloric intake, children should limit their intake of caffeinated food and beverages. Indeed, excessive consumption of these products which are of high caloric value and contain few nutrients, contributes to childhood obesity.

Key actions taken to date by Toronto Public Health have been to support school communities in adopting healthy eating environments, providing healthy food choices through universal student nutrition programs and working with City of Toronto Parks and Recreation to include healthy eating options as part of their Requests For Proposals (RFP) process for food vendors at community centres.

Because of the potential harmful effects of high consumption of “Other Foods” on children’s eating habits and health, Toronto Public Health should continue to be a leader in effecting policy change on the food choices available in Toronto schools. Indeed, the health consequences and economic costs highlighted in the “Promoting Healthy Weights” Board of Health report suggests that it is imperative that Toronto Public Health take action on preventing childhood obesity and promoting healthy weights (14). This direction is congruent with the recommendations in Toronto’s Food Charter, adopted by City Council in 2001 (15). Hence, Toronto Public Health can take action to support healthy eating and promote healthy weights by advocating for, and participating in a consultation with key stakeholders to develop recommendations on foods offered to children in schools.

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List of Attachments:

Appendix I: Recommended Maximum Caffeine Intake Levels

References:

- (1) Health Canada. Food Guide Facts. 1992.
- (2) Nawrot P. et al. *Effects of caffeine on human health*. Food Additives and Contaminants. 2003, Vol. 20, No. 1, 1-30.
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- (11) Tremblay, M.S., Willms J.D. *Secular Trends in the Body Mass Index of Canadian Children*. CMAJ; 163 (11): 1429-33, 2000.
- (12) Occidental College: Center for Food and Justice; Urban and Environmental Policy Institute. *Challenging the Soda Companies: the Los Angeles Unified School District Soda Ban*. September 2002.
- (13) Connolly, C. *Public Policy Targeting Obesity*. Washington Post. Sunday August 10, 2003. Page A01.
- (14) Toronto Board of Health. *Promoting Healthy Weights*. September 2003.
- (15) City of Toronto. Toronto Food Charter. 2001.



Appendix I  
Recommended Maximum Caffeine Intake Levels

	Age	Body Weight*	Maximum Caffeine**	# of 355 mL cola beverages ***
Children	4 – 6 years	18 kg	45 mg/day	About ¾ to 1 can
	7 – 9 years	25 kg	62.5 mg/day	About 1 ½ to 2 cans
	10 – 12 years	34 kg	85 mg/day	About 2 to 2 ½ cans
Women who are planning to become pregnant, pregnant women and breast feeding mothers			300 mg/day	About 6 ¾ to 8 ½ cans
Average Adult			400-450 mg/day	About 8 ¾ to 11 ½ cans

\* Based on average body weights of children (Health and Welfare Canada, 1990)

\*\* Using the recommended intake of 2.5 milligrams per kilogram of body weight per day and based on average body weights of children

\*\*\* One can of cola has 355 mL of beverage. Regular cola beverage has 36 – 46 mg caffeine per 355 mL can