TORONTO STAFF REPORT

August 28, 2006

To: Board of Health

From: Dr. David McKeown, Medical Officer of Health

Subject: Fish Consumption: Benefits and Risks for Populations Vulnerable to Methylmercury

Purpose:

To update the Board of Health on health promotion initiatives to provide fish consumption information to those populations particularly vulnerable to methylmercury (i.e. women of child bearing age and young children), to enhance the availability of this information and to promote efforts to reduce the mercury contaminant burden in fish.

Financial Implications and Impact Statement:

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

Recommendations:

It is recommended that the Board of Health:

(1) request the federal Minister of Health to ensure that the proposed Canada Health Measures Survey to be conducted in 2007 - 2008 by Statistics Canada measures the methylmercury body burden among the Canadian population, particularly among women of childbearing age;

(2) request Health Canada and the Canadian Food Inspection Agency to:

(a) require the posting of federal fish advisories by fish retailers so as to allow the public to clearly identify high mercury fish species;

(b) regularly post test results of mercury and other persistent contaminant levels in fish on the Health Canada website or through other means easily accessible to local health units;

(c) assess, in collaboration with local health units, the mercury content of imported fish species commonly found in a variety of specialized markets in Toronto and other Canadian cities;

(d) expand the fish testing program assessing the mercury content of canned tuna to include a greater number of samples, types and geographic sources, particularly of "light" canned tuna;

(3) request Health Canada to provide appropriate national fish consumption advice, that includes consideration of the variability in frequency and patterns of consumption, to minimize methylmercury exposure for women of childbearing age, pregnant and breastfeeding women and young children age 0 to 4 years;

(4) reiterate to the federal and provincial Ministers of the Environment the need, at a minimum, to strengthen and ensure aggressive implementation of the Canada-wide standard for mercury;

(5) request the Ontario Medical Association, the Ontario College of Family Physicians, the Canadian Paediatric Society, the Society of Obstetricians and Gynaecologists of Canada, the Registered Nurses Association of Ontario, Dietitians of Canada, Breastfeeding Committee of Canada, the Canadian Association of Midwives and Toronto Community Health Centres to endorse counselling women of childbearing age, pregnant and breastfeeding women and parents/caregivers of young children to moderate their fish consumption and where possible, to choose low mercury fish species;

(6) forward this report for information to Health Canada, the Canadian Food Inspection Agency, Environment Canada, Fisheries and Oceans Canada, the Association of Local Public Health Agencies, Ontario Public Health Association, Canadian Public Health Association, the Ontario Medical Association, the Ontario College of Family Physicians, the Canadian Paediatric Society, the Society of Obstetricians and Gynaecologists of Canada, Registered Nurses Association of Ontario, Dietitians of Canada, Breastfeeding Committee of Canada, the Canadian Association of Midwives, Toronto Community Health Centres, the Heart and Stroke Foundation of Ontario, the David Suzuki Foundation, the Ontario Ministers of Natural Resources, Environment, Health and Long-Term Care, Children and Youth Services, and Health Promotion; and

(7) the appropriate City Officials be authorized and directed to take the necessary action to give effect thereto.

Background:

Recent local public health initiatives have explored ways to inform people about the contaminants that may be found in store-bought fish. Based on earlier work by Region of Waterloo Public Health (2004), the Ontario Public Health Association adopted a resolution which made fish consumption recommendations to minimize methylmercury exposure among women of childbearing years and young children (OPHA, 2004). These recommendations are a significant departure from those of Health Canada (2002) and other regulatory and health agencies (see e.g. AHA, 2005; US DHHS/EPA, 2004; UK SACN, 2004).

The attached report summarizes the potential health risks from exposure to methylmercury. Methylmercury is a persistent substance that can be harmful to the developing brain and nervous system. Low-level exposure to methylmercury has been associated with problems with attention, fine-motor skills, language development, visual-spatial abilities and verbal memory among children exposed in the womb (NRC, 2000). Therefore the main concerns are to avoid exposure for women during pregnancy and for infants and young children. These risks are weighed against the health benefits of consuming fish with a focus on vulnerable subgroups. The report also acknowledges the likely variability in fish consumption patterns for Toronto's multi-ethnic population as well as the broader ecological concerns from fish consumption. Toronto Public Health's health promotion advice focuses on vulnerable subgroups such as women of child bearing age (particularly pregnant and breastfeeding women) and the parents/caregivers of young children age 0 to 4 years. Based on the available evidence, Toronto Public Health provides information about methylmercury in fish and encourages individuals to make fish consumption choices so as to minimize exposure. This report identifies actions to reduce mercury contamination of the environment, to increase information available to inform fish choices and to increase the numbers of health care professionals providing fish consumption information.

Comments:

Since the 2004 OPHA resolution, debate over the risks and benefits of fish consumption for the general population and for the identified vulnerable subpopulations, has broadened and intensified. There has been new information on contaminants other than methylmercury in commercial fish. There has also been increasing study of the health benefits of the omega 3 long chain polyunsaturated essential fatty acids (PUFAs) found in fish. Attempts have been made to weigh the risks and benefits of consuming fish, including quantifying the impact on various aspects of population and individual health (see for example, Mahaffey, 2004; Smith & Sahyoun, 2005; Willett, 2005; Teutsch and Cohen, 2005; Cohen et al. 2005). Adding to the debate is attention to the impact of global fish consumption on the sustainability of the world's fisheries (UN, 2005).

Overall, the debate has resulted in confusion as to how much fish should be consumed and by whom. Toronto Public Health has recognized the need to provide useful, clear and relevant information to Toronto residents who are concerned about making the healthiest choices when they eat fish, including prior to or during pregnancy or breastfeeding, or when they serve fish to young children.

Fish consumption is a complex field of study which requires understanding of cultural patterns, food preferences, and the availability and accessibility of diverse fish species. The scientific debate concerning health risks and benefits from fish consumption is not completely resolved in the review presented in the attached report. Some authorities however, have been specific in recommending that the general public consume at least two fish meals per week to gain heart health benefits (AHA, 2005; Kris-Etherton et al, 2002). In some cases, this same advice has been explicitly applied to pregnant and breastfeeding women as well (e.g. see UK SACN, 2004). In contrast, others have recommended that vulnerable subgroups (i.e. women in childbearing years and young children) limit fish meals to no more than once each week to avoid exposure to methylmercury (OPHA, 2004). Such precautionary advice is aimed at protecting children, the most vulnerable individuals, particularly during fetal and infant stages, but also to minimize the body burden of methylmercury in women before they become pregnant. The diversity of fish consumption habits among Toronto's multi-ethnic population necessitates an approach that counterbalances such divergent fish consumption advice, especially for those who already enjoy fish regularly. Toronto Public Health is mindful of the health benefits and cultural significance of fish but stresses that the most prudent fish consumption advice focuses on ways to minimize the risks, particularly for those most vulnerable to toxic exposure, including pregnant or breastfeeding women, women of childbearing age and young children.

Fish Consumption by Vulnerable Population Subgroups:

Available data on mercury content of commercially available fish plus the estimate of mercury intake resulting from the consumption scenario modeling exercise discussed in the attached report, suggest that with a consumption frequency of more than two fish meals per week, it becomes increasingly difficult to stay below both the U.S. and Canadian "tolerable" intake levels for mercury. Vulnerable subgroups can eat up to two fish meals per week but should choose fish species carefully, with emphasis on low mercury species, while avoiding or eating only rarely, some high mercury species, such as fresh or frozen tuna, shark, marlin or swordfish among others. Pregnant or breastfeeding women, in particular, should choose from low mercury species alone and should eat no more than two fish meals per week.

Canned tuna requires special consideration as it is the most commonly consumed fish. Available data indicate clearly that white canned tuna (albacore species) is generally much higher in mercury than light canned tuna made from the skipjack species. The TPH consumption modeling exercise concluded that non-pregnant women in their childbearing years should limit consumption of the higher mercury white canned tuna to no more than one (120 gram) can per month, whereas women who are pregnant or breastfeeding or young children should avoid or eat only rarely (that is, less than once per month) white canned tuna. However, women in their childbearing years can eat about 3 cans of light skipjack tuna a week, while women who are pregnant or breastfeeding and young children should eat no more than one can per week and should keep other weekly fish meals in the "low mercury" category. These recommendations are in line with but more detailed than those of the OPHA (2004) or the U.S. Department of Health and Human Services and U.S. Environmental Protection Agency (US DHHS/EPA, 2004) but are less conservative than recent recommendations that pregnant women avoid all canned tuna (Consumer Reports, 2006). Canadian consumption recommendations for canned tuna would

benefit from more information on the variability in mercury levels in different types of light canned tuna (such as from skipjack versus yellowfin species or from different geographic locations) to ensure that those who frequently eat tuna are not exposed to unacceptable levels of methylmercury.

Toronto Public Health is committed to expanding and refining its guidance on fish consumption, particularly in light of the apparent need to better inform the public on how to avoid mercury in fish (see e.g. CSPI, 2006). However, this requires that federal and provincial agencies conduct more research and make data publicly accessible. For example, data on current levels of mercury in fish available in Canada should be more accessible, particularly information at point of purchase on the high mercury fish species identified in Health Canada's fish advisories. As well, Statistics Canada's planned biomonitoring study in 2007 and 2008 as part of the Canada Health Measures Survey will be helpful to calculate and better characterize the proportion of Canadian women in their childbearing years who have blood mercury levels above those considered "tolerable". These data can also be used to determine which communities should be the focus of health promotion efforts to provide clear fish consumption advice to minimize mercury exposure.

Fish Consumption in Ethnocultural Communities:

It is likely that some ethnocultural communities in Toronto are at risk of higher exposure to methylmercury from high frequency of fish consumption. Research in Southern Ontario and in Vancouver has shown that Asian-Canadians consume fish much more frequently and when tested, are more likely to have higher blood mercury levels than non-Asians (Cole et al, 2004; Innis et al, 2006). Individuals in these communities rely to a greater extent on imported fish, often from specialized markets. Health Canada has currently undertaken a pilot study collecting additional data with respect to mercury and other chemical contaminants in commercial fish available in Asian markets in Toronto; however, there is an urgent need to expand such testing. Such testing programs would benefit from collaboration with local health units who may have links with the community and an understanding of the variability in fish consumption and purchase practices.

It is important to acknowledge the cultural and nutritional significance that fish plays in the diet of these communities. However, these individuals should also be provided with information on how to choose fish species carefully to minimize methylmercury exposure while maintaining the nutritional benefits. Health Canada should be proactive in developing precautionary guidance on commercial fish consumption for frequent consumers. Identifying high consumers might be possible if physicians and other health professionals explored the fish consumption practices of their patients or clients.

Fish Consumption and Environmental Considerations:

Another important factor in consumer choice of fish species must be awareness of the state of global fish stocks and the impact of fish farming practices on the environment and on contaminant levels in fish. Fish consumption advice should include information that allows consumers to make species choices that support sustainability, pollution prevention and

environmental protection. Alongside summarizing information on mercury and omega-3 PUFA levels in various fish species, Table 1 in the attached report identifies potential species-specific ecological concerns. The table shows that it is possible to choose fish species that satisfy all of these considerations, as well as being cost effective, with species such as Atlantic mackerel, herring, sardines and smelt being the most advantageous. TPH will explore ways to integrate credible, accessible information for the public on fish choices that have minimal ecological impact on marine wildlife into any web and print resources that are developed.

Lastly, federal and provincial governments need to continue their work in reducing the release of contaminants such as mercury into the environment so as to restore the safety of this important food source. The Canada-wide Standard (CWS) for mercury, developed in 2000 by the Canadian Council of Ministers of the Environment (CCME), identifies a number of priority sources of mercury to address in Canada. However, TPH has previously commented that the CWS requires strengthening. In June of 2006 the Premier of Ontario announced a significant delay in the planned provincial phase out of coal-fired power plants, one of the priority sources of environmental mercury. This delay represents a substantial set-back to achieving the targets of the mercury CWS nationally. Recently others have called for a more comprehensive national mercury elimination and reduction strategy for Canada that focuses on phasing-out all non-essential uses of mercury in products and substantially increasing the recovery and recycling of mercury-containing products (Pollution Probe, 2006).

Conclusions:

Fish consumption is an integral component of individual and community culture and preferences. Fish consumption has health benefits and risks that vary according to the fish species, size, cultivation as well as amount and means of consumption. While there are a number of contaminants of concern in fish which are detailed in the attached report, the primary focus is methylmercury.

The risks and benefits are not distributed evenly across the population; that is, some subgroups are more vulnerable to the risks from contaminants from fish consumption than others. This report focuses on women of child bearing age, women who are or are planning to be pregnant, breastfeeding women and young children age 0 to 4. It also discusses the risks for individuals from ethnocultural communities with more frequent fish consumption than is typical for the general population of Canadians.

This report presents a number of specific recommendations to federal agencies that address the gaps identified in research, policy and practices. It also suggests that advice to moderate fish consumption to avoid methylmercury exposure be disseminated to the vulnerable subgroups via the health care community.

Contact:

Loren Vanderlinden
Supervisor, Environmental Health Assessment & Policy
Planning & Policy
Toronto Public Health
Tel: 416-338-8094
Fax: 416-392-7418
Email: lvander@toronto.ca

Jan Fordham
Manager, Healthy Families & Communities
Planning & Policy
Toronto Public Health
Tel: 416-338-7443
Fax: 416-338-0921
Email: fordham@toronto.ca

Susan Makin
Interim Director, Planning & Policy
Toronto Public Health
Tel: 416- 338-7832
Fax: 416- 392-0713
Email: smakin@toronto.ca

Dr. David McKeown
Medical Officer of Health

List of Attachments:

Attachment 1: Fish Consumption: Benefits and Risks for Women in Childbearing Years and Young Children. Summary Report

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