

Reducing Skin Cancer Risk from Indoor Tanning

Date:	March 11, 2013
To:	Board of Health
From:	Medical Officer of Health
Wards:	All
Reference Number:	

SUMMARY

Skin cancer is the most common type of cancer in Ontario. Malignant melanoma accounts for the vast majority of deaths due to skin cancer. Data from the Ontario Cancer Registry show that melanoma incidence rates are increasing in Ontario. In 2011, there were an estimated 36,160 new cases of skin cancer in Ontario, of which 2500 (7%) were melanoma. In the same year the estimated cost of medical treatment and loss of productivity due to skin cancer was \$296 million.

The main environmental risk factor for skin cancer is exposure to ultraviolet radiation (UVR) from the sun and through indoor tanning. The available scientific evidence shows that UVR from tanning equipment use increases the risk of all three forms of skin cancer (basal cell carcinoma, squamous cell carcinoma, and malignant melanoma). Despite the risks of UVR exposure from tanning equipment, a significant number of people in Toronto and elsewhere in Ontario, particularly young women, use tanning equipment. Indoor tanning use by Ontario high school students increased between 2006 and 2012.

Under current industry self regulation, indoor tanning facilities in Toronto provide limited information to their customers about the health risks of indoor tanning. Many people, including fair skinned individuals who are at higher risk of skin cancer, and youth continue to be at risk of skin cancer from indoor tanning.

Many health and medical organizations around the world, including the World Health Organization, recommend regulation to ban indoor tanning for people under 18 years old. Six Canadian provinces have introduced or passed such regulation. The Ontario government recently introduced legislation to prohibit the sale and marketing of tanning services to youth under 18 years old. This legislation, if passed, will protect Ontario youth from skin cancer and increase awareness of the health risks of indoor tanning among people of all ages.

RECOMMENDATIONS

The Medical Officer of Health recommends that:

1. The Board of Health commend the Ontario Minister of Health and Long-Term Care and the Premier of Ontario for introducing *Bill 30, An Act to Regulate the Selling and Marketing of Tanning Services and Ultraviolet Light Treatments* to help prevent skin cancer and to protect the public, especially young people, from the harmful effects of indoor tanning.
2. The Board of Health forward this report to the leaders of Ontario's official parties and request their support for *Bill 30, An Act to Regulate the Selling and Marketing of Tanning Services and Ultraviolet Light Treatments*.
3. The Board of Health request the Medical Officer of Health to participate in any public hearings held on *Bill 30* in support of indoor tanning regulation.
4. The Board of Health forward this report to the Canadian Cancer Society, the Canadian Dermatology Association, Ontario's Chief Medical Officer of Health, the Ontario Minister of Health and Long-Term Care, the Ontario Public Health Association, Public Health Ontario, the Association of Local Public Health Agencies, the Canadian Cancer Society-Ontario Division, the Ontario Medical Association, the Registered Nurses Association of Ontario, Cancer Care Ontario, and the Toronto Cancer Prevention Coalition.

Financial Impact

There are no direct financial implications arising from this report.

DECISION HISTORY

This is the first report from the Medical Officer of Health on the issue.

ISSUE BACKGROUND

There are three main types of skin cancer: basal cell carcinoma (BCC), squamous cell carcinoma (SCC) and malignant melanoma. Melanoma is the least common but it accounts for the vast majority of deaths due to skin cancer. BCC and SCC rarely cause death. However, a diagnosis of a first BCC or SCC increases risk for developing a second BCC and SCC^{1,2} and also increases risk of developing melanoma.³

Skin cancer is the most common cancer in Ontario, accounting for one third of all cancer diagnoses in Ontario.^{4,5} In 2011, an estimated 36,160 new cases of skin cancer were diagnosed in the province, of which 2,500 (7%) were melanoma.^{6,7} In 2011 there were an estimated 420 deaths in Ontario due to melanoma.⁷ In Ontario in 2011, skin cancer cost an estimated \$296 million as a result of medical treatment and lost productivity due to illness.⁴ In Toronto alone, there were an estimated 4,580 new cases of skin cancer in 2011, of which 310 (7%) were melanoma.⁶ In 2009, the most recent year for which data are available, there were 61 deaths due to melanoma in Toronto.⁸

The main environmental risk factor for skin cancer is exposure to ultraviolet radiation (UVR) from the sun and through indoor tanning. In this report, "indoor tanning" refers to the use of UVR-emitting equipment and devices including sunbeds, sunlamps and tanning beds.

Toronto Public Health has a mandate under the Chronic Disease Prevention Standard of the Ontario Public Health Standards (OPHS) to support the development of healthy public policy to reduce exposure to ultraviolet radiation (UVR).

Toronto Public Health commissioned a review of the scientific evidence regarding the risks of indoor tanning and skin cancer. Professor Richard Gallagher and Dr. John McLaughlin, epidemiologists with specialties in skin cancer risk assessment and population-based cancer research and prevention, authored a report for Toronto Public Health entitled "Ultraviolet Radiation and Skin Cancer: A Brief Review of the Evidence". The report describes the incidence and trends in skin cancer at the local, provincial and national level. It also describes the risk factors associated with skin cancer, including a comprehensive analysis of the scientific evidence on the link between use of indoor tanning equipment and the risk of skin cancer. Based on the analysis of the evidence available, the authors concluded that the use of tanning equipment causes all three types of skin cancer. The evidence also suggests a dose-response relationship such that the risk of skin cancer increases with each additional indoor tanning session. The report concluded that restricting those under 18 years old from using indoor tanning equipment is warranted. The report is available at <http://www.toronto.ca/health>.

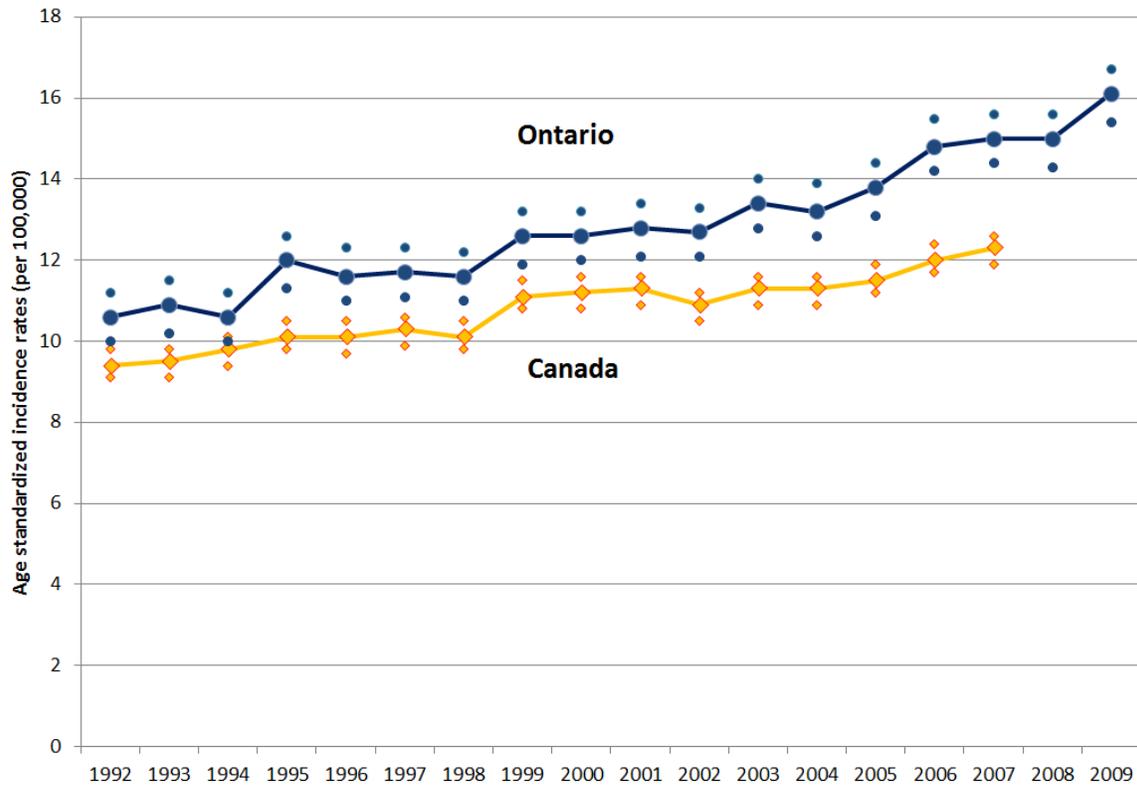
TPH reviewed information provided to the public on Toronto indoor tanning facilities' websites to determine if the information was consistent with national *Guidelines for Tanning Salon Owners, Operators and Users* (2005) published by Health Canada.⁹ The results, contained in a report entitled "Review of Toronto Indoor Tanning Facilities' Websites,"¹⁰ identified that only one third of the websites provided information on the health risks of indoor tanning to the consumer/public. Only two websites provided information about the increased risk of skin cancer. None of the websites advised young people not to use tanning equipment. The report is available at <http://www.toronto.ca/health>.

COMMENTS

Melanoma is Increasing in Ontario

Melanoma incidence rates have been increasing throughout Canada. In Ontario, the incidence rate of melanoma increased by 52% from 10.6 per 100,000 in 1992 to 16.1 per 100,000 in 2009 (see Figure 1).⁶ From 1992 to 2007, the incidence rate of melanoma in Ontario was consistently higher than the national rate.

Figure 1 : Age Standardized Incidence Rates for Cutaneous Malignant Melanoma, for Canada and Ontario, by year, both sexes combined, 1992-2009 (with 95% confidence limits, per 100,000, standardized to 1991 Canadian population)



Source: Statistics Canada, online CanSim system accessing the 2011 Canadian Cancer Registry (Table 103-0553)

Ultraviolet Radiation and Health Effects

Ultraviolet radiation (UVR) is an invisible type of electromagnetic radiation, which is classified according to its wavelength: UV-A (315-400nm), UV-B (280-315 nm), and UV-C (100-280nm). UV-C is the shortest of the three wavelengths and is filtered out by the earth's ozone layer before reaching the earth. Most of the UVR that passes through the ozone layer is comprised of UV-A (90%-95%) with a smaller proportion comprised of UV-B (5%-10%).¹¹

The adverse health effects of UVR have been known for some time. UVR exposure can cause sunburn, wrinkling and premature skin aging, suppression of the immune system, cataracts, and eye and skin cancers.^{12,13,14,15}

UVR, specifically UV-B, also plays a critical role in the production of vitamin D in humans. Vitamin D is essential for keeping bones healthy.¹⁶ However, given the health risks of UVR exposure, medical and cancer experts, including the Canadian Dermatology Association¹⁷ and the Canadian Cancer Society,¹⁸ recommend that people eat a healthy diet and take Vitamin D supplements as a safe and effective way to increase vitamin D levels.

UVR-Emitting Devices for Indoor Tanning

Over the years, different types of tanning equipment have been manufactured that emit different concentrations of UV-A, UV-B, and UV-C. Devices from the early 1960s emitted higher levels of UV-B and UV-C than modern devices. In the late 1960s and 1970s, the devices still produced relatively high levels of UV-B. To address increasing concerns about the risk of cancer associated with UV-B exposure, tanning equipment developed in the 1980s and onward emitted mostly UV-A with a smaller amount of UV-B.^{19,20} In the 1990s, tanning equipment was introduced that mimicked the UVR emissions from the sun (around 4% UV-B, 96% UV-A).²⁰ Tanning equipment emitting almost exclusively UV-A was also introduced, which reduced the time required to achieve a tan.²⁰

Since these technological changes, the question had been raised as to whether the newer machines are "safe" or safer than earlier models for indoor tanning use. Until recently, there was limited information about whether the risk of skin cancer varied for different types of tanning equipment. However, a recent well-conducted case-control study in Minnesota found that all types of tanning equipment increase the risk of melanoma.²¹ The authors concluded that no tanning equipment should be considered to be safe.

Tanning equipment is also considered no safer than exposure to UVR from the sun. Studies of modern tanning equipment have found UVR emissions equal to or exceeding those of the midday sun in the Mediterranean.^{22,23,24} Also, in commercial use, the emissions from tanning equipment can vary considerably based on age of the equipment, degree of maintenance, and other variables.²⁵ As a result, users may be exposing themselves to dangerous and variable levels of UVR.

Scientific Studies Show Tanning Equipment Use Causes Cancer

In 2009, the International Agency for Research on Cancer (IARC)ⁱ classified UV-emitting devices as carcinogenic (i.e., cancer causing) to humans.²⁶ A recent review of all available research linking indoor tanning equipment use and skin cancer risk found that people who had used tanning equipment at least once were 20% more likely to develop melanoma than those who had never used tanning equipment.²⁷ The risk of melanoma was even higher for those who started using tanning equipment before the age of 35; these individuals were 59% more likely to develop melanoma than those who had never used tanning equipment.²⁸ Furthermore, the risk of developing melanoma increased by 1.8% with each additional tanning session per year. Indoor tanning was also associated with a 9% increased risk of BCC and a 123% increased risk of SCC (i.e., users of tanning equipment are more than twice as likely to develop SCC).

ⁱ IARC is part of the World Health Organization of the United Nations. The organization conducts rigorous reviews of the scientific evidence on substances or environmental exposures that can cause cancer. IARC's system for classifying carcinogens is widely used by governments and public health agencies around the world to develop policies and programs to improve population health. It is significant that indoor tanning equipment is categorized in the agency's highest cancer risk group as a known carcinogen: most substances categorized by the IARC are listed as being of probable, possible, or unknown risk.

Indoor Tanning Use in Toronto and Ontario

Despite the risks of UVR exposure from tanning equipment, many people in Toronto and elsewhere in Ontario, especially young women and youth, use indoor tanning equipment.²⁹ According to the 2011 Toronto Health Survey about 284,900 Toronto adults 18 years of age and over (13.4%) reported having used indoor tanning equipment at least once in their lives.³⁰ Of these, just over one in five (22%) started using tanning equipment when they were younger than 18 years old. Indoor tanning use in Toronto is highest among young white women 18 to 34 years of age; 44% reported using tanning equipment at some point in their lives.

Research also suggests that indoor tanning by young people has been increasing in Ontario. Surveys conducted on behalf of the Canadian Cancer Society (CCS) show that between 2006 and 2012, the prevalence of tanning equipment use more than doubled, from 7% to 16%, among Ontario students in grades 11 and 12.³¹ This research also shows that the likelihood of having used indoor tanning equipment increases during late teens. In the 2012 CCS Ontario survey, 1% of grade 7 students reported ever having used a tanning bed compared with 9% of grade 10 students and 21% of grade 12 students.³²

According to the 2012 CCS Ontario survey, the main reasons students gave for using tanning equipment were: feeling like they looked better with a tan (females=66%, males=53%), to build a base tan (females=57%, males=44%), to be tanned before going on vacation (females=51%, males=44%), and to be tanned for a special occasion (females=45%, males=27%). Peer influence was also noted as a reason by many students, with 39% of female students and 33% of male students reporting that they used tanning equipment because their friends used them.

Indoor Tanning Facilities in Toronto

Indoor tanning services are provided in tanning salons as well as some beauty salons, spas, and health and fitness facilities. While there is no official registry or profile of the industry, TPH estimates that there are at least 80 indoor tanning facilities in Toronto based on a comprehensive online search. However, since this search was more likely to identify tanning salons than tanning services provided in other settings, the actual number of tanning facilities in Toronto is likely higher.

Industry Self-Regulation of Indoor Tanning

The indoor tanning industry is primarily self-regulating. The Joint Canadian Tanning Association (JCTA) has developed "Guidelines for Tanning Facilities".³³ These voluntary guidelines refer to the importance of operator training and certification, restriction of equipment control to certified operators only, written parental consent for clients under the age of 18, mandatory protective eyewear, skin-typingⁱⁱ clients correctly, and not allowing people with skin type 1 (who always burn and never tan) to use tanning equipment. However, these industry guidelines are not enforced and the JCTA does not represent all indoor tanning facilities. TPH's review of websites of indoor tanning

ⁱⁱ People with all skin types can get skin cancer; however, individuals with very fair skin who always burn and never tan (skin type I) or individuals with fair skin who burn easily and tan with difficulty (skin type II) are at higher risk of skin cancer.³⁴

facilities found that about a third of the 40 websites indicated an affiliation with the International Smart Tan Network but only three specified that they were JCTA members.

Practices of Indoor Tanning Facilities in Toronto

Two systematic investigations of indoor tanning facilities in Toronto have been conducted to determine whether businesses were following the recommendations in the *Guidelines for Tanning Salon Owners, Operators and Users (2005)* published by Health Canada.⁹

In 2007, Youthography³⁵ conducted a compliance audit for the Ontario division of the Canadian Cancer Society. Research assistants, including youth under 16 years old, were trained to act like indoor tanning customers. Using this "mystery shopper" approach, they visited 79 Toronto facilities to determine if the businesses were implementing the *Guidelines*. The study found that the majority of the facilities did not provide information about skin cancer risk associated with indoor tanning use (83%), nor did they properly assess skin types (65%). Only 1% of the facilities discouraged tanning equipment use for customers with skin type I and 60% did not ask the age of the young researchers.

In 2011, TPH assessed whether the websites of Toronto indoor tanning facilities contained information that was consistent with the *Guidelines'* recommendations.¹⁰ Websites are considered an important source of information for indoor tanning customers looking for local businesses. Overall, the study found that only 15 (38%) of the 40 websites contained information about the health risks of tanning (sunburn, premature aging, skin cancer and/or eye problems). Only a third (13 websites; 33%) provided information on factors that increased the health risk of UVR exposure (e.g., photosensitive products, fair skin). Only two websites provided information about skin cancer risk from tanning equipment use. Only two websites advised people with fair or sensitive skin not to tan. None of the websites provided information consistent with the *Guidelines'* recommendation that children under 16 years old should not use indoor tanning equipment.

Toronto Public Health's website analysis also examined the marketing and advertising messages used to promote indoor tanning services. The most common theme was that indoor tanning is "safe" compared to tanning outdoors (17 websites; 43%). A third of the websites (13 websites; 33%) identified benefits related to vitamin D production. A small number of websites (20% or less) promoted other health benefits such as improving mental health, preventing chronic diseases, decreasing risk of cancer, and improving skin conditions.

Presently in Ontario, there is no regulation that specifically governs the way businesses promote indoor tanning services other than the advertising standards and rules that apply to most other Canadian corporate entities. People viewing tanning websites may be influenced by the promotional messages on the websites about health benefits and safety, and consequently may not realize the actual health risks of indoor tanning.

The results of these studies suggest that industry self-regulation is not effective for protecting people from the health risks of UVR exposure from tanning equipment.

Stakeholder Perspectives on Indoor Tanning Regulation

The Joint Canadian Tanning Association (JCTA) has opposed bans against youth access to tanning equipment. They have preferred parental consent for minority age youth and have expressed willingness to work with governments to strengthen voluntary guidelines.³⁶ However, a 2012 Ipsos Reid survey commissioned by the Canadian Cancer Society (Ontario) suggests that a youth ban would be more effective than parental consent provisions in reducing indoor tanning among youth based on the observations that many parents give permission and pay for their children to tan. The survey found that 24% of youth who use tanning equipment reported that their parents first introduced them to tanning and 52% reported that their parents paid for their use of tanning equipment.³¹

Many Canadian and Ontario medical and health-promoting organizations, including the Canadian Medical Association, Canadian Dermatology Association, Canadian Paediatric Society, Ontario Medical Association, Association of Local Public Health Agencies, and the Canadian Cancer Society, have called for indoor tanning regulation. These groups all recommend that children and youth under 18 years old not be allowed to use tanning equipment. In addition, many Ontario public health units have passed resolutions, either individually and/or through the Association of Local Public Health Agencies, to urge the province to enact indoor tanning regulation.

The public is also in favour of indoor tanning regulation in Ontario. A 2011 Ipsos Reid poll of 822 Ontarians aged 18 and over, commissioned by the Canadian Cancer Society (Ontario), found that 80% of adults support legislation to regulate the tanning industry and 83% support a ban on indoor tanning for youth under 18 years old.³⁷

Legislation and Policies on Indoor Tanning Equipment and Use

The WHO Recommends Comprehensive Indoor Tanning Legislation

The World Health Organization (WHO) does not recommend the use of tanning devices for cosmetic purposes. Furthermore, the organization advises governments to enact comprehensive indoor tanning legislation that includes providing information on health risks to consumers, restricting access to people under 18 years old, and reducing the number of automated machines.³⁸

Laws that restrict young people's access to indoor tanning have already been passed in many jurisdictions worldwide including most Australian and US states, France, Germany and the UK.³⁹ Australia, in particular, has taken a bold position on the issue: the states of Victoria, South Australia and New South Wales have plans to completely ban indoor tanning by the end of 2014.⁴⁰

Federal Regulation of Tanning Equipment and Voluntary National Guidelines

In Canada, the federal government regulates tanning equipment and devices through the *Radiation Emitting Devices Act (REDA)*, *Tanning Equipment Regulation*.⁴¹ Also at the federal level, Health Canada publishes *Guidelines for Tanning Salon Owners, Operators and Users (2005)*. These national *Guidelines* were developed to provide tanning salon owners, operators and users of tanning equipment with a fundamental understanding of UVR and potential adverse health effects. The *Guidelines* discuss the risks of tanning and provide tanning safety guidelines for operators. The *Guidelines* recommend restricting the use of indoor tanning equipment for people under age 16 and those with fair skin who easily burn and never tan. A Federal-Provincial-Territorial Radiation Protection Committee (FPTRPC) Working Group on Tanning Beds is currently reviewing the *Guidelines*.

The *REDA* provides some level of health protection for consumers by establishing requirements for construction and functioning of tanning equipment, information which must accompany tanning equipment, and labels which must be displayed on the equipment; however, monitoring or inspections of machines is not done proactively. The national *Guidelines* provide general information about UVR, including health risks, and guidelines for operators but guideline recommendations are voluntary. This means that indoor tanning facility owners or operators are under no legal obligation to comply with the recommendations, and Health Canada has no mandate to enforce the recommendations or to inspect indoor tanning facilities. This lack of enforcement creates a gap in health protection.

In February 2013, the federal Health Minister announced that Health Canada intends to strengthen its health warnings about the dangers of tanning beds.⁴² The proposed changes to the *REDA* regulations would require a health warning label be attached to all ultraviolet-emitting tanning equipment that displays the following messages: “Not recommended for use by those under 18 years of age” and “Tanning Equipment Can Cause Cancer”, as well as a bulleted list of other health risks associated with tanning.⁴³

A Number of Canadian Provinces Regulate Indoor Tanning Use

Six provinces in addition to Ontario, have passed (Nova Scotia, Manitoba, Quebec, and British Columbia) or introduced (Prince Edward Island and Newfoundland and Labrador) indoor tanning legislation to close the health protection gap. Five of these provinces have or intend to ban tanning equipment use for minority age youth, whereas Manitoba requires informed parental consent for those under 18 years.⁴⁴

The Ontario Government Has Introduced Legislation to Regulate Indoor Tanning

On March 7, 2013 the Ontario government introduced *Bill 30, An Act to Regulate the Selling and Marketing of Tanning Services and Ultraviolet Light Treatments* for first reading in the provincial legislature.⁴⁵ Four private member's bills on the issue had been

introduced in the legislative assembly since 2008.ⁱⁱⁱ *Bill 30* honours the commitment made by the government in the fall of 2012 to support regulation of indoor tanning following the introduction of *Bill 126 An Act to enact the Skin Cancer Prevention Act, 2012 and to amend various statutes with respect to health matters*, by France G  linas, Member of Provincial Parliament.

Bill 30, if passed, will:

- prohibit the sale of tanning services or ultraviolet light treatments to youth under 18;
- require tanning bed operators to request identification from people who appear to be under the age of 25;
- ban advertising and marketing of tanning services or ultraviolet light treatments to youth under 18;
- require tanning bed owners to post signs about the ban and the health risks associated with the use of tanning beds;
- authorize inspectors to inspect and enforce these requirements;
- set fines for tanning bed operators who fail to comply with the legislation. Fines are set at \$5,000 for individuals and \$25,000 for corporations;
- require that all tanning bed operators provide the local Medical Officer of Health with the name, business address, and business telephone number where the tanning service or ultraviolet treatment is or will be sold.

Regulation of Indoor Tanning in Ontario Will Reduce Skin Cancer Risk, Particularly Among Youth

Research clearly shows that UVR from tanning equipment use increases the risk of all three forms of skin cancer. However, many people in Toronto and elsewhere in Ontario, particularly young women and youth, use indoor tanning equipment. Indoor tanning equipment use among grade 11 and 12 Ontario students doubled between 2006 and 2012, from 7% to 16%.

Bill 30, which will restrict access to indoor tanning equipment for youth under 18, is consistent with existing restrictions on minors' access to other harmful substances such as tobacco and alcohol. These restrictions recognize that youth are less likely to consider the long-term health consequences of their actions when making decisions. This is particularly relevant to indoor tanning as skin cancer resulting from the use of indoor tanning equipment may take many years to develop. Despite opposing bans against youth access to indoor tanning equipment in the past, the JCTA has indicated that it is not opposed to the age based restriction.⁴⁶

Oakville, Mississauga, Peel Region, and Belleville currently have by-laws which restrict access to tanning equipment for persons under the age of 18. Restricting minors' access to tanning equipment at the provincial level, with penalties for operators who fail to comply

ⁱⁱⁱ *Bill 83 Skin Cancer Prevention Act, 2008; Bill 31 Skin Cancer Prevention Act, 2010; Bill 74 An Act to Help Prevent Skin Cancer, 2012; Bill 126 An Act to enact the Skin Cancer Prevention Act, 2012 and to amend various statutes with respect to health matters (Schedule 3)*

with the legislation, will protect all Ontario youth from the health risks of indoor tanning. Other provisions in *Bill 30*, such as requiring tanning bed owners to post signs regarding the health risks associated with the use of tanning beds, will promote informed decision making and increase the entire population's awareness of the adverse health effects of indoor tanning.

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