



Canadian Cancer Society  
Société canadienne du cancer

## **Artificial Tanning: Policy Analysis Canadian Cancer Society, Ontario Division**

A policy paper by the  
Canadian Cancer Society, Ontario Division

With special thanks to the Ontario Sun Safety Working Group (OSSWG)  
November 2006

## Executive Summary

The purpose of this policy analysis is to inform Ontarians about the burden of skin cancer in Ontario, with a focus on artificial tanning as an important risk factor for the development of skin cancer. Skin cancer is the most common type of cancer among Canadians, accounting for approximately one-third of all new cancer cases in 2006, or about 72,500 cases.<sup>1</sup> An estimated 30,000 Ontarians are diagnosed each year with skin cancer.

This paper examines current international and national tanning industry regulations, using Ontario data where available and appropriate. While public education on skin cancer and the risks of artificial tanning is ongoing, this paper concludes that regulation of the artificial tanning industry is necessary to protect the health of Ontarians particularly among young adults and prevent further increases in skin cancer.

Ultra violet radiation (UVR) has long been recognized as carcinogenic, causing all forms of skin cancer.<sup>2</sup> Exposure early in life (during childhood and adolescence) seems to be particularly important in terms of skin cancer risk.<sup>3</sup> Traditionally, the main source of UVR exposure in Ontarians for tanning purposes has been the sun, but tanning equipment now represents an increasingly important exposure source, especially among adolescents and young adults.<sup>4</sup> There is strong evidence that this source of exposure increases the risk of melanoma, and the U.S. Department of Health and Human Services has labelled tanning equipment as carcinogenic.<sup>5</sup> Key health authorities around the world are clear on the need for regulation of tanning equipment.

Since 1980, Health Canada has advised Canadians to reduce exposure to UVR from the sun and tanning equipment in order to protect themselves from sunburn and long-term health effects such as eye damage and skin cancer. To help protect the health of Canadians, Health Canada regulates tanning equipment through the *Radiation Emitting Devices Act*, (*RED Act*) which was recently updated. Health Canada has also prepared guidelines for tanning salon owners, operators and users.

The Federal-Provincial/Territorial Radiation Protection Committee recommended in 1999 that protective measures against excessive exposure to solar and artificial UVR be implemented by provincial/territorial authorities and adopted by the general public. The Committee recommended that tanning and the use of tanning equipment by minors be discouraged and that provincial governments evaluate the need to regulate tanning salons.

In March 2005, the World Health Organization (WHO) released recommendations that tanning equipment not be used for cosmetic purposes and that therapeutic use of tanning equipment be only under medical supervision. In addition, WHO recommends that tanning equipment not be used by minors under the age of 18 or by individuals who have one or more characteristics that increase their risk of skin cancer from UVR exposure.<sup>6</sup> The Canadian Cancer Society has adopted these positions of the World Health Organization.

## Recommendations for Policy Change in Ontario

**1. No person under the age of 18 should be permitted to use artificial tanning equipment.**

As much as 60% of lifetime exposure to UVR takes place before the age of 18 years and use of tanning equipment by adolescents is increasing. UVR exposure is an important risk factor for the development of skin cancer, and evidence suggests that risks may be higher for exposures occurring during childhood and adolescence.

**2. Advertising for artificial tanning should not be permitted to target youth under the age of 18.**

The tanning industry is growing and has been effective in promoting increased artificial tanning by young people. The current practice of allowing direct marketing to school age youth, such as through schoolyard flyer drops and in yearbooks, promotes tanning as a normal, safe practice.

**3. Training of all staff who operate artificial tanning equipment should be mandatory.**

UVR, including that emanating from tanning equipment, is a known human carcinogen, causing skin cancer, as well as eye burns, cataracts and ocular melanoma. Furthermore, some members of the population are especially sensitive to UVR.

**4. The Ontario government should implement and enforce legislation governing the artificial tanning industry.**

Regulating artificial tanning is an important approach to preventing skin cancer and other health consequences related to UVR exposure. Regulations governing the artificial tanning industry should include mandatory training of all staff on how to operate and maintain the equipment, how to identify skin types and how to enforce the use of eye protection by customers. Tanning equipment is known to be available in a variety of commercial locations and regulations should encompass all venues.

**5. As part of the review of the Ontario Mandatory Health Programs and Services Guidelines, the current guideline on reducing skin cancer incidence should be strengthened, including raising the need for a coordinated, comprehensive, provincial ultraviolet radiation (solar and artificial) safety strategy with dedicated resources and ongoing surveillance of tanning equipment use in young adults.**

## **Artificial Tanning: Policy Analysis**

### **Canadian Cancer Society, Ontario Division**

#### **Introduction**

Overexposure to ultraviolet radiation (UVR) is a significant public health problem. Efforts to protect Ontarians from the harmful effects of UVR have the potential to prevent serious health consequences, in particular skin cancer, and reduce the burden on the health care system. While progress has been made through the provision of sun safety programs that inform citizens about protecting against solar UVR, the use of tanning equipment is increasing across the province. The government needs to further the development of healthy public policy and promote behaviour change related to UVR exposure, particularly from tanning equipment.

#### **Ultraviolet Radiation and Skin Cancer**

UVR is derived mainly from the sun. Most solar UVR comes from Ultraviolet A rays (UVA) that can penetrate deep into the skin, causing wrinkles and aging. Ultraviolet B rays (UVB), nearly 1000 times stronger than UVA rays, are the most damaging to our skin, causing sunburns and DNA damage. Both UVA and UVB have well-known carcinogenic properties.<sup>7,8</sup> A tan is a result of overexposure to UVR, through production of the pigment, (melanin). While melanin provides the skin with a small degree of UVR protection, the tanning process itself indicates damage to cellular DNA.

#### **Types of Skin Cancer**

There is ample scientific evidence demonstrating that exposure to UVR causes skin cancer in humans, including squamous cell carcinoma (SCC), basal cell carcinoma (BCC) and melanoma.<sup>9</sup> These various forms of skin cancer are named for the type of cells that become cancerous. Basal cell skin cancer grows slowly and usually occurs on areas of the skin that have been in the sun. Squamous cell skin cancer also occurs on parts of the skin that have been exposed to sun, sometimes spreading to lymph nodes and internal organs. Treatment of these types of skin cancer is usually simple and effective. In contrast, melanoma develops in the deepest layer of skin in the pigment-producing melanocytes and is more aggressive than other skin cancers. Melanoma can be difficult to treat and may be fatal.<sup>10</sup> It is estimated that at least 65-90% of melanomas are caused by UVR, both natural and artificial.

Parts of the eye can also suffer acute and chronic effects from exposure to UVR.<sup>11</sup> There is evidence that cataracts, ocular melanoma and basal cell carcinoma on the eyelid are associated with long term exposure to UVR. For this reason eye protection is recommended during UVR exposure.

## Exposure to UVR—Populations at Increased Risk

Research indicates that the most important periods of life for sun protection are childhood and adolescence. There are three lines of evidence supporting this fact. Firstly, as much as 60% of the lifetime exposure to UVR takes place before the age of 18.<sup>12</sup> Secondly, although cancer generally occurs after the age of 65, melanoma is the third most common form of cancer among young Canadians aged 20-39 years and half of all cases occur before the age of 50.<sup>13,14</sup> Thirdly, childhood and adolescence may be times of particular susceptibility to the carcinogenic efforts of UVR.<sup>15</sup> For these reasons, many organizations have recommended that particular attention be given to reducing UVR exposure among children and adolescents. Reduced exposure is likewise recommended for people who have one or more of the following characteristics, which increase their susceptibility to skin cancer from UVR:<sup>16,17,18</sup>

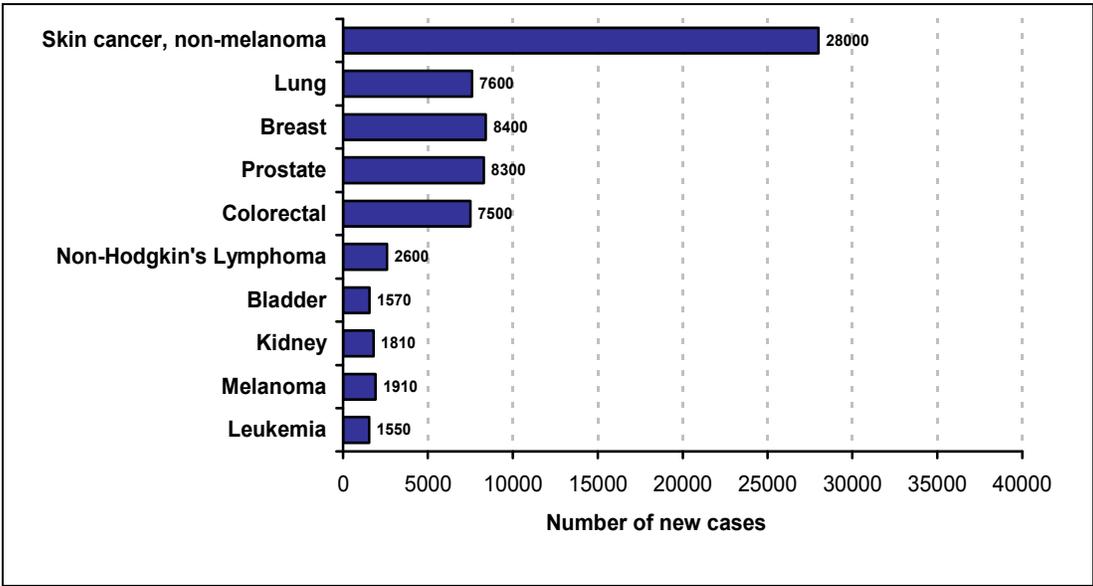
- have light-coloured skin, eyes and hair (particularly red hair);
- have a tendency to freckle;
- have many moles;
- have a family history of skin cancer;
- had several blistering sunburns as a child;
- use certain drugs or cosmetics that make them more sensitive to UVR;
- have had an organ transplant; and
- take medications that suppress the immune system.

## Skin Cancer in Ontario

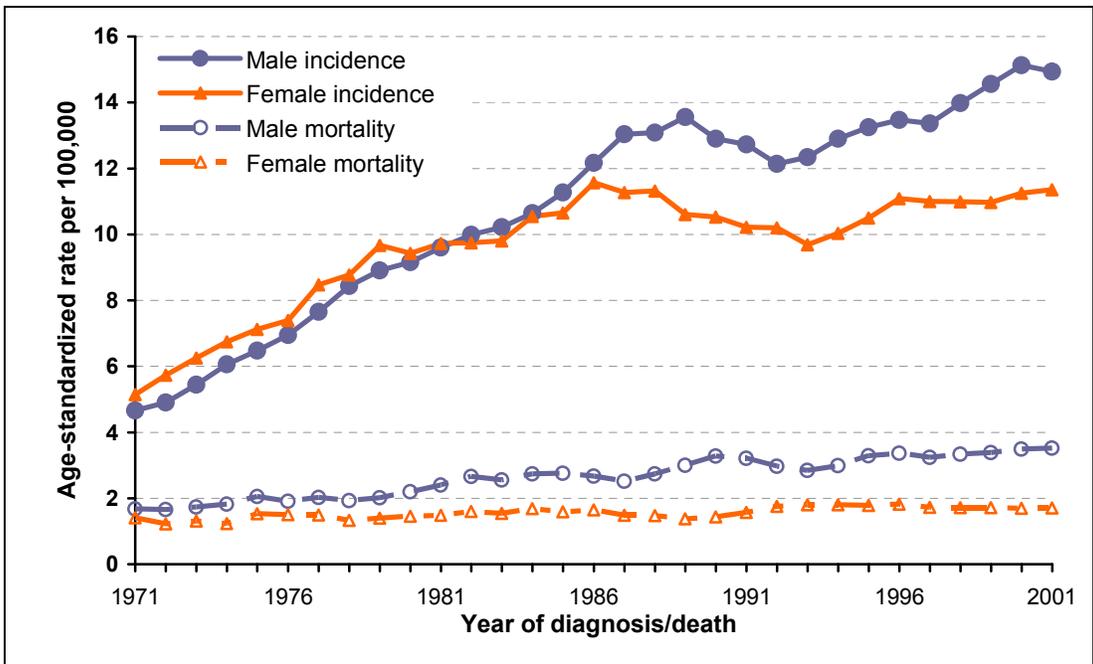
Figure 1 shows the estimated number of new cancer cases in Ontario in 2006. Non-melanoma skin cancer, (basal cell carcinoma and squamous cell carcinoma), is the most prevalent cancer diagnosis with three times more cases occurring annually than the second most common cancer, breast cancer in women.

Figure 2 shows increases in the incidence and mortality rates for melanoma in Ontario over the past three decades. Of particular note is the significant increase in both incidence and mortality rates. In 1971, there were approximately 5 cases per 100,000 in men and women. By 2000 the rate had risen to 15 per 100,000 men and 11.5 per 100,000 women. Mortality rates have also been increasing slightly but steadily. Melanoma is the third most common form of cancer in young Canadians aged 20-39 years.<sup>19</sup>

**Figure 1: Estimated number of new most common cancer cases, Ontario, 2006<sup>20</sup>**



**Figure 2. Melanoma incidence and mortality, Ontario 1971-2001<sup>21</sup>**



## Vitamin D

Vitamin D is an important micronutrient that maintains calcium and phosphate levels in our bodies necessary for the development of healthy bones. Good dietary sources of vitamin D are fatty fish and fortified milk and supplements, such as multivitamin pills. Our major source of vitamin D, however, comes through skin exposure to UVB, which triggers vitamin D synthesis. This process is partially blocked by using sunscreen and by covering the skin with clothing.

It is not necessary to be exposed to large amounts of UVB to produce sufficient levels of vitamin D. Debate continues about the optimum level of vitamin D. For the majority of Canadians, incidental exposure to the sun through day-to-day activities, combined with normal dietary intake of vitamin D, provides adequate vitamin D in spring, summer and fall. However, because UVB from the sun is weak during the Canadian winter, getting recommended levels of vitamin D through sun exposure alone is not possible in the winter. In this case and for those at increased risk of vitamin D deficiency, some authorities have recommended supplementation and small amounts of unprotected sun exposure.<sup>22</sup> However, not all authorities agree on this practice.<sup>23</sup>

## The Risks of Artificial Tanning

The desire to acquire a tan for fashion or cosmetic purposes has led to the development of a large tanning industry in Canada and other developed countries. Tanning equipment, such as sunlamps, tanning beds and tanning booths, emits predominantly UVA radiation, as well as some UVB. In recent years the lamps for tanning equipment have been manufactured to produce higher levels of UVB in order to mimic the solar spectrum and speed the tanning process.<sup>24</sup> Current tanning industry marketing often highlights these “new bulbs” or “hot bulbs.”

There is a common misperception that artificial tanning is safer than sun tanning.<sup>25</sup> In fact, a person’s reaction to UVR (tanning or burning) is theoretically the same whether the exposure is natural (solar) or artificial.<sup>26</sup> The UVR output levels of tanning equipment vary considerably, with some machines capable of emitting levels of UVA about five times greater than produced by the sun. The risks of artificial tanning may be even greater if the use of commercial tanning equipment is unsupervised or if the customer controls exposure time.

Research shows that the risks of UVR exposure apply whether the UVR is from artificial tanning or sun exposure. In 2000 the U.S. Department of Health and Human Services concluded that ultraviolet radiation emitted by tanning equipment is carcinogenic.<sup>27</sup> A 2005 review of the scientific literature found a 25% increased risk of developing malignant melanoma among those who had ever used artificial tanning equipment compared to those who never used the equipment.<sup>28</sup> People with the longest duration or highest frequency of use had a 61% greater risk of developing melanoma compared to

never-users. Those who were first exposed to artificial tanning equipment as a young adult had a 69% increase in risk over those whose exposure occurred later in life. The study concluded that any use of artificial tanning devices elevates risk for melanoma.<sup>29</sup>

Melanoma incidence is increased with intermittent exposure to UVR. There is concern that tanning equipment brings further increased risk due to its intermittent nature. In addition, the area of skin exposed to ultraviolet radiation in tanning equipment is usually greater than during outdoor sun exposure, further increasing the health risk. As over exposure to UVR during childhood and adolescence is a risk factor for melanoma, youth under the age of 18 may be at particular risk from using tanning equipment.<sup>30</sup>

UVR damage from tanning equipment is not limited to the skin. Without use of proper eye protection while tanning, overexposure to UVR can cause temporary but painful eye conditions known as photokeratitis and photoconjunctivitis. More importantly, overexposure to UVB radiation is linked to the development of cataracts, a clouding over of the lens of the eye, which can cause blindness.<sup>31</sup>

Exposure to UVR from either the sun or artificial sources is a considerable public health concern. In addition to the enormous human costs of skin cancer, including pain, disfigurement, suffering and death, increasing rates of skin cancer impose substantial costs on the provincial health care system for screening, treatment and monitoring of patients. It is also not uncommon for a person to have more than one skin cancer in their lifetime—multiple basal cell carcinomas in particular. In its 2005 strategy paper, the National Sun Safety Committee of the Cancer Strategy for Cancer Control estimated that the economic impact of skin cancer alone is at least \$55-\$60 million per year.<sup>32</sup>

## Artificial Tanning in Ontario

The use of tanning salons is greatly increasing in both the U.S. and Canada. The International Tanning Association states that artificial tanning is a \$5 billion a year industry in the United States alone.<sup>33</sup> The 1996 National Survey on Sun Exposure and Protective Behaviours showed that exposure to artificial UVR through the use of tanning equipment is on the rise in Canada.<sup>34</sup> The survey found that 25% of the population actively seeks a tan either from the sun or from artificial methods. About 23% of women and 14% of men use artificial tanning. Tanning is much more common among younger age groups, with 30% of 15 to 24 year-olds and 49% of 25 to 44 year-olds engaged in tanning behaviours.<sup>35</sup>

There is a lack of current information on the prevalence of tanning equipment use throughout Ontario. Data from 2004 is available for seven public health units in the province. This data shows that 7.2%-11.5% of adults age 18 and over report having used artificial tanning equipment in the past 12 months. Among people aged 18 to 34 years, use of tanning equipment ranges from 13.2% to 23.6%.<sup>36</sup> No Canadian data is available for youth under 18. However, data from a 2005 U.S. study revealed that 9% of adolescent girls aged 14-17 years had used tanning equipment. Girls aged 14-17 were seven times

more likely to tan artificially than boys in the same age group. The use of tanning equipment increased with age from 14–17 years.<sup>37</sup>

## The Tanning Industry

There are currently no regulations requiring tanning equipment operators to register the fact that their premises offer tanning services. As a result no accurate account exists of the number of tanning equipment operators in the province or across the country. Likewise there is no way to assess the type and amount of tanning equipment in use. Anecdotally it is well-known that the presence of tanning equipment is extensive and growing—in health and fitness clubs, condominium fitness centres, beauty salons, spas, chain stores and independent businesses. Fabutan, Tan Factory and GoodLife Fitness Clubs are some of the largest companies that operate province-wide. In addition, there are many smaller tanning chains and fitness clubs across Ontario, as well as countless independent outlets.

There is no formal organization responsible for self-governance of the tanning industry in Canada; however, there are a number of U.S. and international tanning organizations with links to Canada. Based in Washington, D.C., the Indoor Tanning Association was founded in 1999 to “protect the freedom of individuals to acquire a suntan.” It represents thousands of indoor tanning manufacturers, distributors and facility owners.<sup>38</sup> The International Smart Tan Network focuses on operator training and “certification programs.”<sup>39</sup> A Canadian branch of the Smart Tan Network exists to promote and facilitate the tanning business within Canada. The U.S.-based National Tanning Training Institute (NTTI) was established in 1992 to provide training on the “science of tanning” for tanning equipment owners and operators in order to improve “the professionalism and reputation of the indoor tanning industry.” NTTI offers an online certification course for Canadian tanning operators.<sup>40</sup> However, none of these organizations are responsible for these guidelines being met by the tanning industry.

## The Shortcomings of Industry Self-Regulation

The tanning industry has gone largely unregulated in Canada, and it has shown little interest in or capacity to self-regulate effectively, especially at the operator level. Organized inspection programs for tanning facilities have consistently shown that the original design safety features of tanning equipment are often not maintained by the operators.<sup>41</sup> A U.S. study demonstrated that tanning facility operators frequently misinform patrons of indoor UVR exposure risks.<sup>42</sup> Less than half of facility operators in Colorado, Texas and Wisconsin, for example, informed patrons about the risk of skin cancer from indoor tanning.<sup>43</sup>

The Canadian tanning industry has also been found to propagate misinformation on the benefits of tanning. The industry has claimed that using tanning equipment promotes health by increasing vitamin D production in the skin and has recommended UVR exposure to meet vitamin D needs. In London, Ontario, for example, a billboard

advertisement for one tanning salon stated, “Tans fight Cancer? Vitamin D is Key. We Give It Away Free in Every Tan.” While the claim that artificial UVR produces vitamin D in the skin is correct (provided the tanning lamps emit UVB radiation), the claim about cancer prevention is not substantiated.”<sup>44</sup> In February 2006 after a lengthy mediation process, the Competition Bureau and Fabutan Corporation reached an agreement requiring Fabutan to stop making representations to the public linking indoor tanning with health benefits.<sup>45</sup> Fabutan had made claims regarding unproven health benefits of vitamin D from indoor tanning and was promoting tanning as useful in treating seasonal affective disorder and stimulating the metabolism, which requires visible light, not UVR.

People can get sufficient vitamin D through dietary supplementation and incidental sun exposure, without significantly increasing their risk of skin cancer.

The tanning industry also promotes the protective value of a ‘base tan’ in preventing sunburns. They purport that gaining a tan before sun exposure during winter tropical vacations, for example, offers significant protection. One tanning salon pamphlet states, “If you’re going south, remember indoor tanners are 81% less likely to sunburn.” This claim is dangerously erroneous, as a tan only provides the same protection, as a sunscreen with an SPF of 2-3,<sup>46</sup> nowhere near the recommended minimum protection of SPF15.

The tanning industry has also been shown to target the vulnerable youth market through activities such as circulating flyers on high school campuses and placing advertisements in high school yearbooks.

Recognizing the inadequacy of industry self-regulation, the World Health Organization recommends that government health authorities develop public health policies regarding the use of indoor tanning equipment, including comprehensive legislation governing its operation. Suggested areas for public policy include improving consumer information, limiting access to those over the age of 18 and eliminating unsupervised tanning.<sup>47</sup>

## Canadian Regulation of Artificial Tanning

In February 2005 the twenty-five year-old federal *Radiation Emitting Devices (RED) Act* was amended, setting new technical and labelling requirements for tanning equipment used by Canadian operators.<sup>48</sup> While the *RED Act* covers issues relating to exposure time and consumer warnings, its application and scope are limited, pertaining only to manufacturers’ point-of-sale and marketing practices, not to tanning equipment operation. Other limitations include the facts that the requirements do not apply retroactively to equipment already in use (before 2005), and the *Act* does not provide a mechanism for monitoring and enforcement.

In addition to the legislation, Health Canada developed “Guidelines for Tanning Salon Owners, Operators and Users.” The Guidelines outline the risks of tanning, provide tanning safety information, and summarize the key requirements of the *RED Act*.<sup>49</sup>

- Trained staff should always be on the premises during operational hours.
- UVR warning signs must be posted on all equipment.
- Operators should keep client profile and records of their exposure/visits.
- Individuals under the age of 16 years and those with sensitive skin should not use tanning units.
- Approved safety eyewear must be provided to customers, along with instructions on proper use.
- Equipment must be properly maintained and disinfected.
- Adverse reactions must be documented and reported.

While it is recommended that all tanning equipment operators read and follow these guidelines, adherence is voluntary. There is currently no mechanism for dissemination, training, certification or enforcement of the guidelines.

At present two Canadian provinces have legislation regulating artificial tanning facilities, New Brunswick and Saskatchewan. The table below compares the provisions of these laws to the requirements of the *RED Act* and the World Health Organization recommendations.

<b>WHO</b>	<b>Health Canada</b>	<b>New Brunswick</b>	<b>Saskatchewan</b>
<i>Recommendations (2005)</i> <sup>50</sup>	<i>Radiation Emitting Devices (RED) Act (2005)</i> <sup>51</sup>	<i>Radiological Health Protection Act (1992)</i> <sup>52</sup>	<i>Radiation Health and Safety Regulations (1993)</i> <sup>53</sup>
<ul style="list-style-type: none"> <li>• Prohibits youth under the age of 18</li> <li>• Mandates warning notices</li> <li>• Requires client consent forms for all operations</li> <li>• Excludes skin type 1 from access</li> <li>• Requires operator training and supervision</li> <li>• Prohibits claims of health benefits</li> <li>• Sets maximum exposure time and maximum repeat exposure</li> <li>• Makes eyewear compulsory</li> <li>• Prohibits unsupervised establishments</li> </ul>	<ul style="list-style-type: none"> <li>• Provides guidance re UV outputs for tanning equipment at the time of sale only</li> <li>• Requires manufacturers to include new warning labels on equipment</li> <li>• Does not apply retroactively</li> <li>• Enforcement is minimal and reactive i.e. based on complaints</li> </ul>	<ul style="list-style-type: none"> <li>• Mandates tanning operator standards related to seeking informed consent, reading warning notices, prohibiting repeat exposure and monitoring complaints</li> <li>• Restricts use to those aged 18 and over</li> <li>• Includes maintenance in tanning equipment standards</li> <li>• Requires radiation warning signs</li> </ul>	<ul style="list-style-type: none"> <li>• Establishes “Guidelines for Tanning Salon Owners and Operators related to the Risks of Tanning and Tanning Safety”</li> <li>• Mandates adherence to pertinent regulations by salon owners/ operators</li> <li>• Sets minimum health standards for Personal Service Facilities</li> </ul>

New Brunswick’s legislation is fairly comprehensive and aligned with the recommendations of the World Health Organization; however, there are gaps in compliance with and enforcement of the legislation. Some other provinces are actively

working on measures to protect the public from the hazards of artificial tanning. In 2006, Nova Scotia's Sun Safety Committee submitted a comprehensive legislative proposal to the Minister of Health. British Columbia has developed Guidelines for Tanning Bed Operators, which are an adaptation of Health Canada's Guidelines.<sup>54</sup> The Ontario government's Mandatory Health Programs and Services Guidelines, currently under review, stipulates that one role of public health is to slow the rise in the incidence of skin cancer. This goal is to be achieved through efforts to increase the proportion of the population of all ages who limit sun exposure, wear protective clothing and sunscreen and avoid artificial sources of UVR. While there are currently no municipal by-laws in Ontario that regulate tanning facilities, a number of health units have undertaken work in this area. The Middlesex-London Health Unit is taking action to reduce the use of tanning equipment by 18-34 year-olds in the region from 18.4% to 5% by the year 2020 in line with the 20% reduction set forth in the 2003 report "Targeting Cancer: An Action Plan for Cancer Prevention and Detection." To this end, the Middlesex-London Board of Health is working with the City of London to develop a strategy for by-law development. In fall 2005, the Board of Health of the Thunder Bay District Health Unit passed a resolution supporting the WHO recommendation that governments ban minors from using commercial tanning equipment.

## International Regulation of Artificial Tanning

Table 2 provides examples of different regulatory approaches to governing the artificial tanning industry from other western jurisdictions.

<b>Table 2. International Models for Regulation of Artificial Tanning Industry</b>	
<b>France<sup>55</sup></b>	<ul style="list-style-type: none"> <li>• Most comprehensive legislation</li> <li>• Requires UVR emitting appliances to be declared to health authority</li> <li>• Prohibits youth under 18 years from using tanning equipment</li> <li>• Requires commercial establishments to have trained personnel supervising</li> <li>• Limits amount of UVB in UV output of tanning equipment</li> <li>• Forbids any claim of health benefit from UVR</li> </ul>
<b>Belgium<sup>56</sup></b>	<ul style="list-style-type: none"> <li>• Requires operator training</li> <li>• Prohibits youth under 15 years from using tanning equipment</li> <li>• Requires client consent for initial visit</li> <li>• Mandates posting of warning signs</li> </ul>
<b>United States<sup>57</sup> (Federal Regulations)</b>	<ul style="list-style-type: none"> <li>• Under US Food and Drug Administration (FDA)</li> <li>• Requires warning labels about skin types</li> <li>• Mandates advising users to wear goggles to protect eyes</li> <li>• Through agreements controls access by minors in some states: New Jersey prohibits youth under 14; Wisconsin prohibits under 16; North Carolina prohibits under 13; Florida and Arizona prohibit youth under 18 without parental consent</li> <li>• Florida and Arizona require operator training</li> </ul>

<b>California</b> <sup>58</sup>	<ul style="list-style-type: none"> <li>• Prohibits youth under 14 years from using tanning equipment</li> <li>• Requires youth aged 14-18 years to have signed note from parent</li> <li>• Requires tanning facilities to provide customer with written warning of dangers of artificial tanning</li> <li>• Requires customers to sign waiver</li> <li>• Mandates client consent for first visit</li> <li>• Prohibits tanning facility from making claims that using tanning device is safe or free from risk</li> <li>• Mandates operator training</li> <li>• Requires that trained operator be present during operating hours and be able to inform and assist each customer in proper use of equipment</li> <li>• Limits maximum proportion of UVB in UV output of tanning equipment</li> </ul>
<b>Colorado</b> <sup>59</sup>	<ul style="list-style-type: none"> <li>• Requires operators to register and pay annual fee; annual fee offsets cost of compliance checks</li> <li>• Mandates posting of warning signs within one meter of machine</li> <li>• Requires client consent</li> <li>• Prohibits claiming as FDA-approved service</li> </ul>
<b>United Kingdom</b> <sup>60</sup> <b>(Before Senate)</b>	<ul style="list-style-type: none"> <li>• Prohibits youth under 16 years from using tanning equipment</li> <li>• Bans coin-operated tanning machines because they cannot be monitored</li> </ul>
<b>Australia</b> <sup>61</sup>	<ul style="list-style-type: none"> <li>• Voluntary industry code in place</li> <li>• Prohibits tanning facility from making claim that using tanning equipment has health benefits</li> </ul>

## Denormalization of Tanning Behaviour

The tanning industry aggressively markets to youth, as demonstrated by the advice to tanning equipment operators in a recent issue of the industry magazine *Looking Fit*:

“Emerging onto the tanning scene is Generation Y—the generation born between 1978 and 2000 that accounts for approximately 76 million Americans. According to Wikipedia, economic materialism seems to be abundant with Generation Y. This group is the offspring of the first generation of U.S. indoor tanners. Salons should take special notice of this segment and market accordingly.”<sup>62</sup>

Health organizations and governments must work hard to counter the messages regarding the desirability of looking tanned promoted by both the tanning and fashion industries. The National Sun Safety Committee of the Canadian Strategy for Cancer Control calls for implementation of a mass media campaign to denormalize the desirability of a tan among children, teens and young adults. The Committee also recommends developing strategies to improve knowledge in the population about the risks associated with tanning and the use of tanning equipment and to decrease these practices.

As the dangers of artificial tanning become more of a public issue, socially responsible messages have begun to appear in the mass media. The May 2006 issue of the successful

women's fashion magazine, *Cosmopolitan*, for example, featured a "Practice Safe Sun" guide, which urged readers to "fight skin cancer—stop all forms of tanning other than tanning from a bottle."<sup>63</sup> Likewise, a recent on-line edition of *Cosmopolitan* provided clear information on the harm caused by use of tanning equipment: "It's amazing how many sun-savvy chicks stretch out inside a tanning bed like a rotisserie chicken for 30 or so minutes on a weekly or even daily basis, truly believing that frying their skin indoors is somehow safer than roasting in the sun outside. But indoor tanning beds are at least as harmful as the sun." In Ontario, the Thunder Bay District Health Unit used testimonials by local residents with skin cancer to get the message to teens about the dangers of tanning. One teenager's battle with skin cancer is featured in the health unit's 2005 *Skin Savvy* magazine.<sup>64</sup>

Many doctors and public health practitioners are speaking out to deter youth from using tanning equipment and are encouraging sunless tanning lotions instead. More work can be done with pharmacists and public health agencies to better promote the use of sunless tanning products, which are safe and effective.

Communities across Ontario need to develop local education campaigns that promote the message that using tanning equipment is unsafe. As well, harm reduction messages, such as promoting the use of eye protection during every tanning session, are needed for those who will continue to use tanning equipment despite knowing the risks.

## Conclusions

Skin cancer is the most common type of cancer and is largely preventable through minimizing exposure to UVR. A key priority for the Canadian Cancer Society, Ontario Division, and Cancer Care Ontario is the reduction of UVR exposure in young adults; one of the specific targets of Cancer 2020, a cancer prevention action plan, is a 75% decrease in the number of young adults (under 35 years) using tanning equipment by the year 2020.<sup>65</sup> Given the proliferation of tanning equipment in Ontario, achieving this goal and thus reducing the incidence of skin cancer among Ontarians will require concerted action on numerous fronts.

The Ontario government needs to show leadership by regulating the artificial tanning industry. Regulation of the industry will help inform Ontarians of the harmful effects of artificial UVR exposure, will assist the population to make more informed decisions about using tanning equipment and will protect those most at risk.

The health community must work with other sectors to denormalize the practice of artificial tanning and promote the use of self-tanning lotions and tanning sprays as an alternative. Most importantly, health organizations must make health promotion efforts aimed at improving self-esteem and body image among young people a higher priority, emphasizing the beauty of all skin colours and devaluing the importance of tanned skin.

## Glossary of Terms

**Artificial tanning/indoor tanning:** Use of UVR emitting lamps, rather than the sun, to get a tan, Tanning beds, tanning booths and lamps the most common types of tanning equipment.

**BCC:** Basal cell carcinoma. Usually occurs on areas of the skin that have been in the sun. Usually grows slowly and responds well to treatment.

**Melanoma:** Develops in the deepest layer of skin in the pigment-producing melanocytes and is more aggressive and more fatal than other skin cancers.

**Non-melanoma skin cancer:** Includes basal cell carcinoma and squamous cell carcinoma, the most common forms of skin cancer. These types are usually simple to treat and are rarely fatal. However, they can require extensive and disfiguring surgery, reconstructive surgery and radiation

**SCC:** Squamous cell carcinoma. Occurs on parts of the skin that have been exposed to sun, sometimes spreading to lymph nodes and internal organs. Usually responds well to treatment.

**Skin type 1:** Type 1 always burns and never tans. Type 1-skin owners have pale, white skin, red or pale blonde hair, are blue-eyed and have freckles.

**Tanning equipment:** Equipment, such as tanning beds, tanning booths and sun lamps that emit UVA and UVB rays.

**UVA:** Long wave-length ultraviolet radiation (315 to 400 nm).

**UVB:** Short wave-length ultraviolet radiation (280 to 315 nm).

**UVR:** Ultraviolet radiation or UVR is the portion of the sun's electromagnetic radiation that encompasses wave-lengths 100–400 nm.

## References

- <sup>1</sup> Canadian Cancer Society/National Cancer Institute of Canada, *Canadian Cancer Statistics 2006*, 2006.
- <sup>2</sup> International Agency for Research on Cancer (IARC), *Solar and ultraviolet radiation: IARC monographs on the evaluation of carcinogenic risks to humans*, Vol. 55, 1992.
- <sup>3</sup> BK Armstrong, "Chapter 7: Sun Exposure in Skin Cancers," in *Epidemiology, Causes and Prevention of Skin Diseases*, JJ Grab, RS Stern, RM MacKie, MA Weinstock, eds., 1997.
- <sup>4</sup> R Sanderson and K McKinnon, "Artificial Tanning Use in London-Middlesex," *The Health Index*, Issue 14, Middlesex-London Health Unit, April 2005.
- <sup>5</sup> U.S. Department of Health and Human Services, Public Health Service, National Toxicology Program, *Report on Carcinogens, Tenth Edition*, 2002.
- <sup>6</sup> C Sinclair, *Artificial Tanning Sunbeds: Risks and Guidance*, World Health Organization, 2003.
- <sup>7</sup> International Agency for Research on Cancer (IARC), *Solar and ultraviolet radiation: IARC monographs on the evaluation of carcinogenic risks to humans*, Vol. 55, 1992.
- <sup>8</sup> U.S. Department of Health and Human Services, Public Health Service, National Toxicology Program, *Report on Carcinogens, Eleventh Edition*, 2005.
- <sup>9</sup> International Agency for Research on Cancer (IARC), *Solar and ultraviolet radiation: IARC monographs on the evaluation of carcinogenic risks to humans*, Vol. 55, 1992.
- <sup>10</sup> National Cancer Institute. Retrieved from <http://www.cancer.gov>.
- <sup>11</sup> R Doll, National Radiological Protection Board, *Effects of Ultraviolet Radiation on Human Health: Report of an Advisory Group on Non-Ionising Radiation*, Volume 6, No. 2, 1995.
- <sup>12</sup> Federal Provincial Territorial Radiation Protection Committee (FPTRPC), "Solar and Artificial Ultraviolet Radiation: Health Effects and Protective Measures (Position Statement and Overview)," 1999.
- <sup>13</sup> Canadian Strategy for Cancer Control, National Sun Safety Committee, *Strategic directions for the primary prevention of skin cancer in Canada*, December 2005.
- <sup>14</sup> K Glanz, M Saraiya, H Wechsler, Centers for Disease Control and Prevention, "Guidelines for School Programs to Prevent Skin Cancer," *Morbidity and Mortality Weekly Report* 2002; 51(RR04): 1-16.
- <sup>15</sup> BK Armstrong, "Chapter 7: Sun Exposure in Skin Cancers," in *Epidemiology, Causes and Prevention of Skin Diseases*, JJ Grab, RS Stern, RM MacKie, MA Weinstock, eds., 1997.
- <sup>16</sup> C Sinclair, *Artificial Tanning Sunbeds: Risks and Guidance*, World Health Organization, 2003.
- <sup>17</sup> Federal Provincial Territorial Radiation Protection Committee (FPTRPC) for Ultra Violet Radiation, "Solar and Artificial Ultraviolet Radiation: Health Effects and Protective Measures (Position Statement and Overview)," 1999.
- <sup>18</sup> National Cancer Institute. Retrieved from <http://www.cancer.gov/>.
- <sup>19</sup> Canadian Strategy for Cancer Control, National Sun Safety Committee, *Strategic directions for the primary prevention of skin cancer in Canada*, December 2005.
- <sup>20</sup> Canadian Cancer Society/National Cancer Institute of Canada, *Canadian Cancer Statistics 2006*, 2006.
- <sup>21</sup> Cancer Care Ontario, *Ontario Cancer Registry*, 2004. Graph shows three-year moving averages standardized to the Canadian 1991 population.
- <sup>22</sup> Cancer Care Ontario, "Sun Safety and Vitamin D," *Ontario Cancer Facts*, June 2006.
- <sup>23</sup> U.S. Department of Health and Human Services, Public Health Service, National Toxicology Program, *Report on Carcinogens, Eleventh Edition*, 2005.
- <sup>24</sup> C Sinclair, *Artificial Tanning Sunbeds: Risks and Guidance*, World Health Organization, 2003.

## References Continued

- <sup>25</sup> RP Gallagher, JJ Spinelli, TK Lee, “Tanning Beds, Sunlamps, and Risk of Cutaneous Malignant Melanoma,” *Cancer Epidemiology Biomarkers & Prevention* 2005; 14(3): 562-566.
- <sup>26</sup> C Sinclair, *Artificial Tanning Sunbeds: Risks and Guidance*, World Health Organization, 2003.
- <sup>27</sup> U.S. Department of Health and Human Services, Public Health Service, National Toxicology Program, *Report on Carcinogens, Eleventh Edition*, 2005.
- <sup>28</sup> RP Gallagher, JJ Spinelli, TK Lee, “Tanning Beds, Sunlamps, and Risk of Cutaneous Malignant Melanoma,” *Cancer Epidemiology Biomarkers & Prevention* 2005; 14(3): 562-566.
- <sup>29</sup> RP Gallagher, JJ Spinelli, TK Lee, “Tanning Beds, Sunlamps, and Risk of Cutaneous Malignant Melanoma,” *Cancer Epidemiology Biomarkers & Prevention* 2005; 14(3): 562-566.
- <sup>30</sup> C Sinclair, *Artificial Tanning Sunbeds: Risks and Guidance*, World Health Organization, 2003.
- <sup>31</sup> Health Canada, “Tanning Lamps: It’s Your Health,” 2003. Retrieved from [http://www.hc-sc.gc.ca/iyh-ivs/alt\\_formats/cmcd-dcmc/pdf/tanning\\_e.pdf](http://www.hc-sc.gc.ca/iyh-ivs/alt_formats/cmcd-dcmc/pdf/tanning_e.pdf) on September 8, 2006.
- <sup>32</sup> Canadian Strategy for Cancer Control, National Sun Safety Committee, *Strategic directions for the primary prevention of skin cancer in Canada*, December 2005.
- <sup>33</sup> International Tanning Association. Retrieved from <http://www.theita.com> on September 8, 2006.
- <sup>34</sup> CY Lovato, JA Shoveller, L Peters, JK Rivers, “Canadian National Survey on Sun Exposure and Protective Behaviours: Youth at Leisure,” *Cancer Prevention and Control* 1998; 2(3): 117-122.
- <sup>35</sup> CY Lovato, JA Shoveller, L Peters, JK Rivers, “Canadian National Survey on Sun Exposure and Protective Behaviours: Youth at Leisure,” *Cancer Prevention and Control* 1998; 2(3): 117-122.
- <sup>36</sup> Institute for Social Research, York University, *Rapid Risk Factor Surveillance System (RRFSS) Study, Waves 37-48, 2004-2005*.
- <sup>37</sup> N.A., “QuickStats: Percentage of Teens Aged 14-17 Years Who Used Indoor Tanning Devices During the Preceding 12 Months, by Sex and Age, United States, 2005,” *Morbidity and Mortality Weekly Report* 2006; 55(40): 1101.
- <sup>38</sup> International Tanning Association. Retrieved from <http://www.theita.com> on September 8, 2006.
- <sup>39</sup> International Smart Tan Network. Retrieved from <http://www.smarttan.com> on September 8, 2006.
- <sup>40</sup> National Tanning Training Institute. Retrieved from [http://www.tanningtraining.com/btc/can\\_course.html](http://www.tanningtraining.com/btc/can_course.html) on September 8, 2006.
- <sup>41</sup> Federal Provincial Territorial Radiation Protection Committee (FPTRPC), “Solar and Artificial Ultraviolet Radiation: Health Effects and Protective Measures (Position Statement and Overview),” 1999.
- <sup>42</sup> LF Heilig, R D’Ambrosia, et al, “A case for informed consent? Indoor UV tanning facility operator’s provision of health risks information,” *Cancer Causes & Control* 2005; 16(5): 557-560.
- <sup>43</sup> LF Heilig, R D’Ambrosia, et al, “A case for informed consent? Indoor UV tanning facility operator’s provision of health risks information,” *Cancer Causes & Control* 2005; 16(5): 557-560.
- <sup>44</sup> Canadian Dermatology Association, “News Release: Sun exposure and healthy levels of vitamin D—Canadian Dermatology Association offers recommendations,” June 13, 2005. Retrieved from [http://www.dermatology.ca/english/news/july-2005\\_e.html](http://www.dermatology.ca/english/news/july-2005_e.html) on August 9, 2006.
- <sup>45</sup> Competition Bureau Canada, “Fabutan agrees to stop promoting unproven health benefits of indoor tanning,” February 27, 2006. Retrieved from <http://www.competitionbureau.gc.ca/internet/index.cfm?itemID=2027&lg=e> on September 8, 2006.
- <sup>46</sup> M Dvugun, B Johnson, C Patterson, “Tanning, protection against sunburn and vitamin D formation with a UVA sunbed,” *British Journal of Dermatology* 1982; 107: 275-284 as cited in J Hawk, “Sunbeds,” *Radiation Protection Dosimetry* 2000; 9(1-3): 143-145.
- <sup>47</sup> U.S. Department of Health and Human Services, Public Health Service, National Toxicology Program, *Report on Carcinogens, Eleventh Edition*, 2005.

## References Continued

- <sup>48</sup> Health Canada, *Regulations Amending the Radiation Emitting Devices Regulations (Tanning Equipment)*, 2005. Retrieved from <http://canadagazette.gc.ca/partII/2005/20050223/html/sor33-e.html> on August 9, 2006.
- <sup>49</sup> Health Canada, Environmental and Workplace Health, “Guidelines for Tanning Salon Owners, Operators and Users,” 2005.
- <sup>50</sup> C Sinclair, *Artificial Tanning Sunbeds: Risks and Guidance*, World Health Organization, 2003.
- <sup>51</sup> Health Canada, *Regulations Amending the Radiation Emitting Devices Regulations (Tanning Equipment)*, 2005. Retrieved from <http://canadagazette.gc.ca/partII/2005/20050223/html/sor33-e.html> on August 9, 2006.
- <sup>52</sup> *New Brunswick Regulation 92-12, Tanning Regulations Issued Pursuant to the Radiological Health Protection Act (92-12)*, February 13, 1992. Retrieved from <http://www.gnb.ca/0062/PDF-regs/92-12.pdf> on August 30, 2006.
- <sup>53</sup> Saskatchewan Labour, *The Radiation Health and Safety Regulations, Issued Pursuant to The Radiation Health and Safety Act*, 1985 Section 20, Order in Council 101/93, February 9, 1993. Retrieved from <http://www.qp.gov.sk.ca/documents/English/Regulations/Regulations/R1-1r2.pdf> on August 9, 2006.
- <sup>54</sup> British Columbia Ministry of Health Services, “Guidelines for Tanning Bed Operators, 1997,” revised in 2004.
- <sup>55</sup> JP Cesarini, “The French Regulations for Ultraviolet Radiation Sunbeds,” *Radiation Protection Dosimetry* 2000; 91(1-3): 205-207.
- <sup>56</sup> World Health Organization, *International Digest of Health Legislation*. Retrieved from <http://www3.who.int/idhl-rils/results.cfm?language=english& type=ByTopic&strTopicCode=XIX&strRefCode=Belg> on October 27, 2006.
- <sup>57</sup> United States Environmental Protection Agency, *UV Tanning Equipment*. Retrieved from [www.epa.gov/radtown/tanning-equipment.htm](http://www.epa.gov/radtown/tanning-equipment.htm) on October 27, 2006.
- <sup>58</sup> *Filante Tanning Facility Act of 1988, California Codes, Business and Professions Code*, Section 22700–22708.
- <sup>59</sup> Colorado Department of Public Health and Environment, *State Board of Health Artificial Tanning Devices*, 1993.
- <sup>60</sup> Cancer Research UK, “News Release: Cancer Research UK Backs Sunbed Regulation in Scotland,” May 1, 2006. Retrieved from <http://info.cancerresearchuk.org/news/pressreleases/2006/may/151734>.
- <sup>61</sup> C Sinclair, *Artificial Tanning Sunbeds: Risks and Guidance*, World Health Organization, 2003.
- <sup>62</sup> J Bizzozoro, “An industry at a crossroads,” *Looking Fit*, September 2006.
- <sup>63</sup> H Levine, “Practice Safe Sun,” *Cosmopolitan*, May 2006.
- <sup>64</sup> R Usenik, “Virginia’s Fight,” *Skin Savvy*, 2005. Retrieved from <http://www.teenwavez.com/image/content/SkinSavvy2005.pdf> on September 8, 2006.
- <sup>65</sup> Canadian Cancer Society and Cancer Care Ontario, “Targeting Cancer: an action plan for cancer prevention and detection,” *Cancer 2020 Background Report*, 2003.