

The Recommended Core Content for Sun Safety Messages in Canada

Briefing on the Results of the 2014/15 National Consensus Process

September 2015

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A. Background

This document presents the results of the 2014/15 National Consensus Process on Recommended Core Content for Sun Safety Messages in Canada. The results serve to guide the development of communications materials for public education on the specific actions individuals need to take to protect themselves against skin cancer and other diseases linked to solar and ultraviolet radiation (UVR) exposure.

Exposure to the sun and other sources of UVR without sufficient protection is known to cause harm to the skin and eyes.¹⁻³ The first and second National Sun Surveys showed that between 1996 and 2006, Canadians generally increased their time in the sun without improving protective behaviours.⁴ At the same time, the incidence rates of melanoma, the most fatal form of skin cancer, have been increasing in Canada and are projected to continue to rise. If current trends trend continue, there is expected to be a 72% increase in the number of new melanoma cases diagnosed between the periods of 2003 to 2007 and 2028 to 2032.⁵

Skin cancer can be largely prevented by reducing UVR exposure⁶ and public education about UVR through consistent messaging is a key part of a prevention strategy. National consensus on sun safety messages was last achieved in Canada in 1994.⁷

In 2014/15, the national consensus process was undertaken and led by the National Steering Committee for Consensus on Content for Sun Safety Messages (Appendix A) to update the sun safety messages that support public education in Canada.

Highlights of updates compared to the 1994 consensus include the following:

- Peak times for when skin protection is required have been updated to 11 a.m. to 3 p.m.; previously they were 11 a.m. to 4 p.m.;
- Sunscreen with a minimum sun protection factor (SPF) of 30, rather than 15, is now recommended; and
- Eye protection messages have been integrated.

A total of 29 representatives from organizations across Canada (Appendix B) with a role in promoting sun safety took part in the process, which comprised a workshop held in Toronto on March 12, 2015, and pre- and post-workshop surveys regarding message content drafted in consultation with a scientific committee (Appendix C). This process was completed in May 2015.

B. Guide to this Document

The recommended core content (Section C) helps organizations with a role in promoting sun safety to form a common understanding of Canada's sun safety messages; however, the underlying expectation is that organizations will modify the wording, the order in which the statements appear and the amount of detail based on media and the needs of their target audience.

There are four groups of statements in the core content:

1. **Key Facts.** These statements highlight for the public the potential harms of solar and ultraviolet radiation (UVR). Users of this document may choose to provide additional information, but these are the core and essential statements for describing why skin and eye protection is needed.
2. **Primary Recommended Protective Action Statements.** These statements provide information on the specific actions that individuals should take to reduce UVR exposure to the skin and eyes.

They focus on information that would be most relevant when protection is immediately required.

- 3. Additional Recommended Protective Action Statements.** These statements provide additional actions to consider when planning daily activities, prior to UVR exposure. They would be most relevant when the audience is receptive to recommendations for advanced planning.
- 4. Tips for Implementing Primary Protective Actions.** These statements provide more specific information on how to implement personal protective measures outlined in the primary protective action statements and are based on measured effectiveness in the research that is cited and found in the list of references at the end of this document. The tips are a secondary level of information to include in materials when space permits.

Organizations across Canada with a role in promoting sun safety are encouraged to adopt, at minimum, the primary recommended protective action statements. By doing so, sun safety information will be communicated more consistently to the public, thereby increasing the likelihood that they will adopt these protective behaviours. Some audiences may require additional information not included within the core content and users of this document are encouraged to integrate further evidence-based information, as needed.

Users can find the rationale for the recommended protective action statements in Section D. Reaching agreement on the protective action statements was the focus of the consensus process, which aimed to balance the goal of reducing UVR exposure with public acceptability and real-world conditions. Section D, therefore, describes the background information used to develop the recommended protective action statements.

Section E provides additional guidance by highlighting key information to communicate from the recommended protective action statements.

The Key Facts and Further Details on the Primary Protective Actions from the Recommended Core Content sub-sections are not included in Sections D and E because they are a direct summary of the established science.

This briefing document is limited in scope. A separate report will be more comprehensive and will address additional considerations for solar and UVR protection, provide a more thorough summary of the evidence and describe the consensus process in further detail.

C. The Recommended Core Content for Sun Safety Messages in Canada

1. Key Facts

- Sources of ultraviolet radiation (UVR) are the sun and UVR-emitting devices, e.g., tanning beds. UVR causes skin cancer and other forms of skin damage (e.g., wrinkling and photoaging of the skin) and causes harm to the eyes.¹⁻³
- Skin cancer is the most common cancer in Canada, and incidence rates for melanoma, the most fatal form of the disease, continue to increase.⁵ Skin cancer is also one of the most preventable cancers.⁶
- While UVR that is harmful to the skin is primarily present in the sun's rays from 11 a.m. to 3 p.m. between April and September in Canada,^{8,9} UVR that is harmful to the eyes is present in the sun's rays all year round and throughout the day.¹⁰ In both cases, UVR can be harmful, even when it's cloudy.⁸⁻¹⁰

2. Primary Recommended Protective Action Statements

Enjoy the sun safely: Protect your skin, protect your eyes.

Protect your skin

- When the UV Index is 3 or higher, protect your skin as much as possible. In general, the UV Index in Canada can be 3 or higher from 11 a.m. to 3 p.m. between April and September, even when it's cloudy.
 - Seek shade or bring your own (e.g., an umbrella).
 - Wear clothing that covers as much skin as possible and a wide-brimmed hat that are appropriate to the activity and weather.
 - Use sunscreen labelled "broad spectrum" and "water-resistant" with a sun protection factor (SPF) of at least 30 on skin not covered by clothing. Apply sunscreen generously and reapply when required.
- Don't use UV tanning equipment or deliberately try to get a suntan, and avoid getting a sunburn.

Protect your eyes

- Wear sunglasses or eyeglasses with UV-protective lenses when outdoors all year round.
- Wear a wide-brimmed hat for added protection.

3. Additional Recommended Protective Action Statements

- Check the daily forecast for the UV Index and protect your skin accordingly.
- Whenever possible, plan outdoor activities for before 11 a.m. or after 3 p.m. between April and September.
- Use sources of vitamin D that are safer than UVR exposure, e.g., dietary sources, including fortified foods, and vitamin D supplements. Intentional UVR exposure to meet vitamin D requirements is not recommended.

4. Tips for Implementing the Primary Protective Actions

Shade

- Good-quality shade includes dense vegetation and covered structures that offer shade from the side, and not just overhead, to protect against scattered UVR.¹¹⁻¹³
- As a general guide, wider and denser sources of shade provide increased SPF.¹²
- Cloth sources of shade, such as canopies and umbrellas, should have tightly woven fabric.¹³
- Additional personal protection (clothes, sunglasses, sunscreen) is recommended under shade to protect against scattered UVR, especially on high UV Index days.¹³

Clothing

- Hats should shade the head, face, ears and back of the neck with a wide brim.¹⁴
- In general, clothing provides better protection than sunscreen.^{15,16}
- Tightly woven or UV-protective labelled clothing is recommended.^{17,18}

Sunscreen

- Sunscreen should be used on exposed skin not covered by protective clothing. Consider using sunscreen for the lips (e.g., sunscreen lip balm), as well.
- Use a generous amount of sunscreen¹⁹ (e.g., the average adult requires approximately two to three tablespoons of lotion-formulated sunscreen to cover the whole body, and a teaspoon to cover the face and neck).
- Reapply after swimming, strenuous exercise or towelling off.²⁰
- Use sunscreen that says on the label:
 - "Broad spectrum"
 - "SPF 30" or higher
 - "Water resistant"
- Sunscreen comes in a variety of formulations. Find one that suits you best and apply it properly with thorough coverage. Sunscreen formulations that you find easier to apply thoroughly will be more effective.

Eye protection

- The best UV protection is offered by close-fitting wraparound sunglasses.²¹
- Look for sunglasses or prescription lenses with full UVA and UVB protection. Examples of appropriate labels are "UV400" or "100% UV protection."
- Contact lenses, even those with UV protection, do not provide full coverage for the eye and the skin around the eye.

D. Rationale for the Recommended Protective Action Statements

Enjoy the sun safely: Protect your skin, protect your eyes.

Enjoy the sun safely

This statement is based on feedback from the health promotion field and recommendations from the National Institute for Health and Care Excellence (NICE) UK²² and the International Commission on Non-Ionizing Radiation Protection (ICNIRP) UVI Working Group²³ to acknowledge the sense of well-being individuals experience when outdoors and to ensure that sun protection messages do not conflict with physical activity messages. Evidence suggests that increased outdoor time, among children and youth in particular, is associated with increased physical activity.^{24,25}

Protect your skin

Ultraviolet radiation (UVR) from the sun and UVR-emitting tanning devices has been classified as carcinogenic to humans by the International Agency for Research on Cancer (IARC):

- Solar UVR causes melanoma, and basal and squamous cell carcinoma.²⁶
- UVR-emitting tanning devices cause melanoma.²⁶

UVB also appears to reduce the effectiveness of the immune system in fighting viral infections (e.g., herpes simplex, human papillomavirus).³

Protect your eyes

There is sufficient evidence that UVR-emitting tanning devices are a cause of some forms of ocular melanoma, although the evidence is limited for solar UVR.²⁶ Chronic exposure to UVR is a risk factor for several other eye-related disorders, including cortical cataracts and pterygium.^{27,28} Acute exposure to UVR can also cause photokeratitis, photoconjunctivitis and retinal burns (e.g., from looking directly at the sun).²⁹ Age-related macular degeneration is likely related to exposure to the visible light portion of sunlight, specifically the blue light range.²

When the UV Index is 3 or higher, protect your skin as much as possible. In general, the UV Index in Canada can be 3 or higher from 11 a.m. to 3 p.m. between April and September, even when it's cloudy.

When the UV Index is 3 or higher, protect your skin as much as possible.

Environment Canada developed the UV Index and issued the first forecasts in 1992.³⁰ In 1994, the World Meteorological Organization and the World Health Organization adopted the index as an international standard and updated it to the current 11-point scale.³¹ The UV Index ranges from 0 (low intensity, usually at night) to 11+ (extreme intensity, usually at solar noon on a clear summer day at the Earth's northern mid-latitudes). The UV Index very rarely exceeds 10 in Canada.³²

The UV Index is based on the erythral (sunburn) action spectrum and primarily includes the UVB spectrum and a portion of the UVA spectrum. The minimal erythema dose (MED) is the measure of the minimum dose of UVR to produce a just-noticeable erythema on previously unexposed skin. The MED varies by skin type, sensitivity to UVR and time. When the UV Index is

3, the first sign of erythema, or 1 MED, occurs after 44.4 minutes for skin type I, the most sensitive skin type (e.g., fair skin and burns easily) and about 56 minutes of exposure for skin type II. When the UV Index is 10, erythema occurs after 13 minutes for skin type I and 17 minutes for skin type II.^{9,33}

In general, the UV Index in Canada can be 3 or higher from 11 a.m. to 3 p.m. between April and September, even when it's cloudy.

The strength of the burning rays of the sun, which is what the UV Index measures, is greatest around solar noon on a clear day in the summer. The UV Index remains strong, at a value of 3 or higher, from about 10 a.m. to 2 p.m. local solar time (approximately 11 a.m. to 3 p.m. during daylight savings time) from April to September in Canada. While UV Index declines with latitude, the differences between Toronto (44 N) and Edmonton (54 N) are not very large.³⁴ One message should work for most of the country.

The ICNIRP UVI Working Group has recommended using a single sun protection message to coincide with times when the UV Index is 3 and above, and to indicate times of day when sun protection is recommended.²³

Partly cloudy skies will either magnify or mitigate UVR, depending on the pattern of cloud cover and the sun's relative position,³⁵ while uniform cloud cover reduces UVR in relation to its thickness.³⁶

- Seek shade or bring your own (e.g., an umbrella).
- Wear clothing that covers as much skin as possible and a wide-brimmed hat that are appropriate to the activity and weather.
- Use sunscreen labelled "broad spectrum" and "water-resistant" with a sun protection factor (SPF) of at least 30 on skin not covered by clothing. Apply sunscreen generously and reapply when required.

- **Seek shade or bring your own.**
- **Wear clothing that covers as much skin as possible and a wide-brimmed hat that are appropriate to the activity and weather.**

Reported use of shade and protective clothing, as well as avoidance of midday sun exposure, is more strongly related to reduced risk of sunburn than sunscreen use.³⁷⁻³⁹ Research has measured substantially higher levels of protection with clothing compared to sunscreen.^{15,16} Shade and clothing can provide broader and more visible coverage than sunscreen.

- **Use sunscreen labelled "broad spectrum" and "water-resistant" with an SPF of at least 30 on skin not covered by clothing. Apply sunscreen generously and reapply when required.**

Evidence for improved outcomes with sunscreen use is not as strong as for shade, which may be in part due to typically inadequate sunscreen application patterns. Therefore, shade and clothing appear before sunscreen in the action statements because they are considered better UVR-protection options.

The effectiveness of sunscreens labelled "broad spectrum" (filtering UVA and UVB) are determined by laboratory tests.¹⁹ Water-resistant sunscreen is recommended to reduce the amount removed through perspiration and swimming. Sunscreens labelled "water resistant" in Canada must continue to provide protection for at least 40 minutes in water.¹⁹

SPF 15 is the minimum accepted protection level for sunscreens in Canada, based on Health Canada regulations. Laboratory tests also show that sunscreen with an SPF of 15 filters 93.33% of UVB, while an SPF of 30 filters 96.67%.⁴⁰ SPF testing to determine the labelled value is based on an application of 2 mg/cm². However, tests of volunteers reporting sunscreen use in community settings show that application densities typically range from 0.5 mg/cm² to 1.3 mg/cm²—substantially less than the recommended amount. Therefore, a minimum SPF of 30 is recommended for use by the public.⁴¹

Reapplication after two hours is not included as a recommendation because research has measured only a 25% reduction in SPF after a day without physical activity or UV exposure,⁴² and even after eight hours on a day with physical activity and bathing, 43% of the initial protective effect of sunscreen was still present.²⁰

Don't use UV tanning equipment or deliberately try to get a suntan, and avoid getting a sunburn.

UVR from the sun and UVR-emitting tanning devices has been classified as carcinogenic to humans by the IARC. UVR-emitting tanning devices cause melanoma.²⁶

Wear sunglasses or eyeglasses with UV-protective lenses when outdoors all year round.

The UV Index is a measure of the shorter wavelengths of the UVR spectrum that cause sunburns, primarily within the UVB spectrum. Since the longer wavelengths of UVR, primarily within the UVA spectrum, are more directly associated with eye health and can be strong throughout day, eye protection messages apply on days even when the UV Index is low. The cornea fully absorbs UVB, but UVA penetrates surface layers and reaches the lens of the eye.⁴³ The importance of UVA is also why eye protection is of concern even in the winter months.

Modern sunglass and eyeglass lens materials commonly available, including polyurethanes (mid- to high-index plastics), polycarbonate and CR39 with UV blocking dye (UV400), provide UVR protection.

Wear a wide-brimmed hat for added protection.

Hats provide additional eye protection when worn in conjunction with eyewear, especially when eyewear does not cover the peripheral areas of the eyes.

Check the daily forecast for the UV Index and protect your skin accordingly.

The UV Index provides more detailed guidance on the level of protection required on a given day. The UV Index can reach up to 10 in Canada and higher in other parts of the world. The higher the UV Index value, the more protection is needed.

However, information on the UV Index is not always accessible throughout the day and real-time values may differ from forecasted values. Therefore this recommendation is listed as an additional recommended protective action statement.

Whenever possible, plan outdoor activities for before 11 a.m. or after 3 p.m. between April and September.

Outdoor activities can involve extended time outdoors (e.g., gardening, athletic events, outdoor work). Avoiding the sun during peak times for the UV Index provides the most reliable and comprehensive protection, but recognizing that avoidance is not always practical, this recommendation is given as an additional one for consideration.

This recommendation is also consistent with many existing occupational health and safety and physical activity recommendations that highlight the need to avoid heat exhaustion.

Use sources of vitamin D that are safer than UVR exposure, e.g., dietary sources, including fortified foods, and vitamin D supplements. Intentional UVR exposure to meet vitamin D requirements is not recommended.

Although UVB exposure can increase vitamin D levels, the science has not established a safe level of exposure in terms of health risk. This recommendation to not use UVR exposure for obtaining vitamin D is consistent with Health Canada's recommendation, which is based on an extensive review by the Institute of Medicine.⁴⁴

E. Key Points to Communicate about the Recommended Protective Action Statements

Enjoy the sun safely: Protect your skin, protect your eyes.

- There are benefits to being outdoors, including increased likelihood of physical activity, and time outdoors should not be discouraged.
- Sun safety means protecting the skin and the eyes.

When the ultraviolet (UV) Index is 3 or higher protect your skin as much as possible. In general, the UV Index in Canada can be 3 or higher from 11 a.m. to 3 p.m. between April and September, even when it's cloudy.

- Skin protection is needed when the UV Index is 3 or higher.
- The peak times, related to the UV Index, are from 11 a.m. to 3 p.m. between April and September in Canada, based on average UV Index values that have been measured by Environment Canada.
- Cloud cover does not typically provide protection.
- The best form of sun protection may not always be practical (which is what is meant by "as much as possible"), but using some protection is better than using none.

- Seek shade or bring your own (e.g., an umbrella).
- Wear clothing that covers as much skin as possible and a hat that are appropriate to the activity and weather.
- Use sunscreen labelled "broad spectrum" and "water-resistant" with a sun protection factor (SPF) of at least 30 on skin not covered by clothing. Apply sunscreen generously and reapply when required.

- Shade is the most preferable form of protection, which is why it is listed first in the protective action statements, and includes shaded surroundings and personal sources of shade. It offers the greatest potential for comprehensive protection.
- For personal protection, coverage from hats and clothing is preferred to sunscreen.
- Full coverage from hats and clothing may not always be practical, especially in extreme heat conditions or during certain types of activities.
- The recommended SPF of at least 30 is increased from previous messages recommending an SPF of 15.
- A sufficient quantity of sunscreen is required to achieve adequate protection, which is significantly more than what is typically applied.
- Reapplication is needed in certain situations as identified in the Tips for Implementing Primary Protective Actions section.

Don't use UV tanning equipment or deliberately try to get a suntan, and avoid getting a sunburn.

- These activities involve excessive exposure to UV radiation (UVR) and should be discouraged.

Wear sunglasses or eyeglasses with UV-protective lenses when outdoors all year round.

- Eye protection is needed throughout the year.
- The majority of sunglasses and eyeglasses sold in Canada that indicate they have UV-protective lenses provide acceptable protection.

Wear a wide-brimmed hat for added protection.

- Hats also provide eye protection.

Check the daily forecast for the UV Index and protect your skin accordingly.

- The daily forecast for the UV Index will provide more specific information on the level of required skin protection.

Whenever possible, plan outdoor activities for before 11 a.m. or after 3 p.m. between April and September.

- Planning outdoor activities earlier in the morning or later in the afternoon (i.e., before 11 a.m. or after 3 p.m. between April and September) is recommended whenever possible.
- If avoiding outdoor activity in the midday sun is not possible, other protective actions (shade, clothing, sunscreen and sunglasses) are recommended.

Use sources of vitamin D that are safer than UVR exposure, e.g., dietary sources, including fortified foods, and vitamin D supplements. Intentional UVR exposure to meet vitamin D requirements is not recommended.

- UVR exposure from the sun or from tanning equipment is not a safe way to meet vitamin D requirements.
- Examples of safer ways to meet vitamin D requirements are through diet, including fortified foods, and supplements.
- Since there is substantial variation in vitamin D levels and needs, each individual should consult trusted sources of advice to determine his or her specific vitamin D requirements. Such advice is beyond the scope of these recommendations for protecting against the harms of UVR exposure.

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Appendix A: Members of the National Steering Committee for Consensus on Content for Sun Safety Messages

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