SunSense

Grades 4-6
Program Objective

The Canadian Cancer Society has designed this program to educate on how to protect ourselves from the dangers of ultraviolet rays and the risks they propose to human health. The program encourages students to follow the Canadian Cancer Society’s SunSense guidelines. The information in this program is valuable to those of all ages but the presentation is specifically geared towards grade four to six students.

In order to keep the participants aware and reminded of the information they gain through this lesson the UV bead bracelet serves as a take away message and reminder to follow SunSense guidelines. Students will be able to wear their UV beads throughout the summer and have them serve as a visual reminder to take extra precautions when they know the UV index is high.

It is recommended to keep the lesson to 30 minutes in order to keep participants’ attention and the messages can then be reinforced through follow up activities (see end of lesson plan).

Students will learn:

• The importance of the sun
• The damaging effects of the sun
• What ultraviolet rays and the UV index are
• How to stay safe in the sun
• What is skin cancer?
• Risks associated with tanning beds

Presentation Tips

This lesson plan serves as a guideline. You know your students best therefore, feel free to alter the lesson format as you wish to fit your teaching style.

Explain that the lesson will only take about 30 minutes and includes a sun safety craft at the end and an opportunity to go outside.

The lesson plan is formatted into 6 main topics with discussion about each one. There are suggested discussion questions at the end of each section, however feel free to add your own. This way the information is more impactful, as the students provide some of it themselves.

The information included in this lesson plan is more in depth and specific than that included in the grade 1 to 3 lesson plan. If you are presenting to a younger audience, we suggest using the grade 1 to 3 lesson plan.
Sun Safety

Research shows that childhood exposure to ultraviolet radiation (UVR) is a contributing factor to the development of skin cancer later in life. Due to children being at school during peak sun and UV hours (11am-3pm) it is important that schools play a role in sun safety messaging and reinforcement.

Skin cancer is the most common type of cancer in Canada and one of the most preventable. While the cause of many cancers is unknown, the most common cause of skin cancer is multiple sunburns and excess UVR exposure. Young people under the age of 18 are at the highest risk, in fact 80% of people’s exposure to UVR occurs before the age of 18.

As Canadian children are spending more time indoors in front of screens and childhood obesity rates are soaring, it is important not to discourage children from going outside. Instead we want to encourage children to use SunSense to play outside safely by establishing sun safe habits. It is imperative that schools are committed to helping reinforce these habits as school is where children spend the majority of peak sun hours and this sets the tone for the habits they will carry throughout the summer.

Information for Teachers

Skin cancer rates are greatly increasing in Canada with an estimated 7200 new cases of melanoma in 2017 alone. Although Canada does experience long winters and cooler temperatures it is important to know that the sun we receive is strong enough to cause skin damage and premature aging. The good news is that skin cancer is highly preventable.

Skin cancer is classified into either melanoma or non-melanoma. While melanoma is less common than non-melanoma it is far more deadly and the most common cancer for young people aged 15-29. UVR from overexposure to the sun or indoor tanning beds is the main risk factor for skin cancers. It is estimated that young people who get 5 or more sun burns have double the risk of melanoma skin cancer.

You need vitamin D which your skin produces when exposed to sunlight, however you do not need a tan to get benefits from the sun. For most people the exposure that you get to the sun when going about your daily life is enough. Getting vitamin D from supplements or your diet is much safer than through UV exposure.

There are three types of UV rays; UVA, UVB, and UVC. UVA rays make up 95% of the sun’s natural light, these are the rays that can cause premature aging. UVB rays make up 5% of the sun’s light and these are the rays that can cause your skin to burn. UVC rays are the strongest of the three but thankfully are absorbed by the Earth’s atmosphere. When choosing a sunscreen, it is important to choose a broad-spectrum sunscreen as both UVA and UVB rays have potential to cause skin damage.

UV rays can get through clouds, fog, and haze, meaning they can still harm you. Water, sand, concrete and especially snow can reflect and increase the sun’s rays. It is important to check the UV index regardless of fog or cloud and take precautions if the UV index is above 3, even in the winter.

<table>
<thead>
<tr>
<th>UV Index</th>
<th>Exposure</th>
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<tbody>
<tr>
<td>0-2</td>
<td>Low</td>
</tr>
<tr>
<td>3-5</td>
<td>Moderate</td>
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<tr>
<td>6-7</td>
<td>High</td>
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<tr>
<td>8-10</td>
<td>Very high</td>
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<tr>
<td>11+</td>
<td>Extreme</td>
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## Curriculum Connections

### Grade 4

<table>
<thead>
<tr>
<th>Subject</th>
<th>Description</th>
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<tbody>
<tr>
<td>Health &amp; Physical Education</td>
<td>A2.3 Assess their level of exertion during physical activity, using simple self-assessment techniques and explain how intrinsic and extrinsic factors affect the exertion required to perform physical activities (extreme hot, sun)</td>
</tr>
<tr>
<td></td>
<td>C2.2 Apply a decision-making process to assess risks and make safe decisions in a variety of situations (how to protect from the sun, when to go in the shade)</td>
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### Grade 5

<table>
<thead>
<tr>
<th>Subject</th>
<th>Description</th>
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<tbody>
<tr>
<td>Health &amp; Physical Education</td>
<td>A3.2 Demonstrate an understanding of proactive measures that should be taken to minimize environmental health risks that may interfere with their safe participation in and enjoyment of outdoor physical activity (applying sunscreen, wearing sunglasses and a hat to protect their skin and eyes from sun damage)</td>
</tr>
<tr>
<td>Science</td>
<td>Understanding Life Systems</td>
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<tr>
<td></td>
<td>Assess the effects of social and environmental factors on human health, and propose ways in which individuals can reduce the harmful effects of these factors and take advantage of those that are beneficial.</td>
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</table>

### Grade 6

<table>
<thead>
<tr>
<th>Subject</th>
<th>Description</th>
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<tbody>
<tr>
<td>Health &amp; Physical Education</td>
<td>C3.2 Recognize the responsibilities and risk associated with caring for themselves and others, and demonstrate an understanding of related safety practices and appropriate procedures for responding to dangerous situations.</td>
</tr>
</tbody>
</table>
Grades 4-6 Lesson Plan

The Sun
The sun is extremely important to our life here on earth, it gives us light, energy and keeps us warm. However, if we aren’t being careful and using our SunSense, the sun can also hurt us by burning our skin or damaging our eyes. Generally, the sun in Canada is strong enough to damage your skin from April to September.

Potential discussion questions: What are some important things the Sun does?

UV

What is UV?
The sun emits ultraviolet rays (UVR) and these are what can cause damage to your skin. The UVR from the sun consists of UVA, B, and C rays. UVA rays are the longest and weakest rays and account for 95% of the UVR that reaches Earth, these are the rays that can cause you to get wrinkles earlier in life as well as causing skin damage. UVB rays are much shorter, meaning they are more powerful, they account for 5% of the UVR that reaches Earth and these are the rays that can damage your skin and cause radiation burns, more commonly known as sunburns. UVC rays are the strongest of all but luckily the ozone layer is able to absorb them, this is one reason why we need to protect our ozone layer.

Potential discussion questions: What are some things we do to help the environment? What are some other ways pollution can affect our health? Have you ever had a sunburn?

What is the UV index?
The UV index tells you how strong the sun’s rays are that day. It is a scale from 1-11+ that will help you know when to protect yourself from the sun. If the UV is below 3 you can play outside safely without burning, but if the UV is between 3-7 you need to remember to protect yourself from the sun, and if the UV is over 8 you REALLY need to protect yourself and should spend as little time outside between 11-3 as possible.

Potential discussion questions: Have you heard of the UV index before? Do you already check the UV index everyday? Where would be a good place to look for the UV index? Why might it be more important to check the UV index when you’re on vacation somewhere warm? What are some places that might have higher UV?

When is the UV index over 3?
In Atlantic Canada the UV is likely be over 3 from April-September, especially between 11am and 3pm when the suns rays are the strongest. The UV index can also be over 3 in the winter, especially if you are playing in the snow because UV rays can reflect off of the snow. This is why it’s important to wear sunscreen on your face when you are doing activities like skiing.

Potential discussion questions: Do you find it surprising that the sun can be so strong here? Why or why not? Did you know you could get a sunburn in the winter?
Skin Damage

Like we’ve talked about before, the sun does lots of good things, but it can also hurt us if we don’t protect ourselves. When our skin is exposed to UV rays it produces a special protection pigment called melanin, but if it can’t produce enough your skin will get a radiation burn, or sun burn. Skin damage, such as a sun burn or even a tan, caused by UV radiation can increase risk of skin cancer.

(It is up to your discretion whether to discuss skin cancer with your group of students. Cancer in any context can be a sensitive topic.)

What is skin cancer?

Cancer is a term that applies to 100+ diseases. What these diseases all have in common is that they cause cells to divide much faster than they are supposed to and this causes lumps/tumours to form. Skin cancer can start in many types of skin cells, basal and squamous cell cancers are most common. Skin cancer can also develop in the cells responsible for producing the melanin that protects our skin, this type of skin cancer is called melanoma and it is the most dangerous. Skin cancer is the most common form of cancer in Canada but it is also one of the most preventable.

Optional Video: What is cancer?: https://youtu.be/HAnmCZeb4Z8

Potential discussion questions: What did you know about cancer before? Now that you know how dangerous UV rays from the sun can be, will you take extra care to protect yourself?

Dangers of Tanning

Tanning Beds

A tan means that your skin has been damaged and has produced a dark pigment called melanin to protect itself. There is no safe way to get a tan, whether it’s from the sun or a tanning bed. Tanning beds can actually expose you to as much as 5 times more radiation than the sun. Tanning beds give off ultraviolet radiation (UVR) which is a known carcinogen, meaning it can cause cancer. In Ontario tanning bed use is illegal for people under the age of 18 because damage to your skin when you’re young is even more dangerous. Remember tanned skin is damaged skin.

Optional Videos:
Epic tan fail: https://youtu.be/bV2RdDz0JdY
The Burnadettes: https://youtu.be/lXby8gnj1rE?list=PLF8CB08D658A893DA

Vitamin D

Your body needs the vitamin D that your skin produces when exposed to the sun. However, tanning is not a safe way to get that vitamin D. Most people get enough vitamin D just from their daily lives and diet. Foods are sometimes fortified with vitamin D or you can also talk to your doctor about taking vitamin D supplements.

Potential discussion questions: Have you seen foods in the grocery store advertising that they have vitamin D? What kinds of foods? Why do you think people go to tanning beds? Now that you know how dangerous tanning beds can be, would you ever use a tanning bed?
SunSense Practices

Tanning Beds

Note: It may be useful to have props on hand of the sun safety measures listed below.

As we’ve learned, when you’re out in the sun it’s important to protect yourself but how do we do that? We need to use our SunSense and remember that when the UV is over 3 we need to use the 5 S’s.

Optional: Talk to the students about the ways animals behave in the heat of the day. The website http://www.foundation.sdsu.edu/sunwisestampede/ may provide useful background information. Where do dogs like to be on a hot day? What do they do? Why are birds busy in the morning and evening, but quiet in the middle of the day? Get them to make some generalizations about animals in summer. Ask whether people are always as smart as animals when it comes to the sun. Point out that temperature and UV radiation are not always linked: even on a cool day, UV radiation levels can be high.

Seek

The fourth S is to SEEK meaning to seek shade. Being in the shade means you’re mostly out of the sun’s rays. You should still use other SunSense measures though since the sun’s rays can reflect off surfaces like concrete and sand. Seeking shade is especially smart between 11am and 3pm when the sun’s rays are at their strongest. You can always be sure to have shade if you bring your own by bringing an umbrella, this can be especially useful at the beach.

Slip

The first S is for SLIP meaning you need to slip on your protective sun clothing. Wearing a long-sleeved shirt and pants is going to protect you from the sun even better than sunscreen will! You want to choose clothing that is loose fitting so you stay cool, but also tightly woven or even with UV protection factor (UPF), to block out UV rays. If you wear a shirt to go swimming that’s great, but when you’re done swimming you should change to a dry shirt because dry clothing will protect you better than wet clothing.

Slap

The second S is for SLAP meaning you should slap on a hat! Preferably you should choose a hat with a wide brim, such as a bucket or sun hat, to protect your ears and the back of your neck as well as your face. You can also look for hats with UPF.

Slop

The third S is for SLOP meaning to slop on some sunscreen. Sunscreen is meant to protect the skin that isn’t covered by your clothing, you should always use sunscreen but you need to remember the other 4 S’s as well. Remember when we said the sun has two types of rays (UVA and UVB) that reach Earth? The sunscreen you use should be broad-spectrum, so that it will protect you from the damage that can be done by UVA and UVB rays. You need to choose an SPF of at least 30 that is water resistant so that it stays on your skin better when you are swimming or sweating. It’s also a good idea to get a lip balm with SPF to protect your lips. Most importantly you need to reapply your sunscreen every 2 hours, especially if you are swimming or sweating and make sure that when you are applying your sunscreen you put on lots, because most people don’t use enough. You should apply your sunscreen 20 minutes before you go outside so your skin has time to absorb it, but if you forget it’s better late than never!

Optional: There are two types of sunscreen, physical and chemical sunscreen. Physical sunscreen, also called sun block, reflects the UV rays off of you, while chemical sunscreen absorbs the UV rays. Both are effective if used properly, the type you choose may depend on how your skin reacts to the ingredients in the sunscreen, if you have sensitive skin you may want to test the sunscreen on a small patch of skin before applying it everywhere.
The fifth, and final, S is SLIDE meaning to slide on your sunglasses. Sunglasses will protect your eyes from being damaged by UV rays. You want to choose sunglasses that have the label UV 400 or 100% UV, they should also be close fitting with thick sides to protect your eyes from all angles.

Potential discussion questions: How many of these things do you already do to protect yourself from the sun? Why do you think a sun hat is better to wear than a baseball hat? Should you follow the 5 S’s even on cloudy days? How can you help yourself to remember that you need to put on more sunscreen every two hours? If you were going to the beach for the day what are some things you should bring with you so that you can stay sun safe? Why is it important to use all 5 S’s instead of just sunscreen?

Optional: 5-minute TED educational video on “Why We Wear Sunscreen”: https://www.youtube.com/watch?v=Z5JTdsTze0

Check your Skin
You should check your skin at least once a month to look for any new spots or changes to old spots. You should look for:

Asymmetry – one half of the mole is unlike the other half
Border – irregular or questionable border
Colour – darkening or loss of colour, black or black-blue are the most common colours but it could also be shades of red, blue or white.
Diameter – larger than 6mm as a rule (diameter of a pencil eraser)
Evolution – a new or old mole changes in any way. Other indications are if it is hard, lumpy, oozing, bleeding or itchy.

If you notice any of these things tell your guardian so they can make an appointment with your doctor, and your doctor will decide if you need to see a dermatologist.

Discussion questions: Do you have any questions about anything we learned today?

Conclusion
The key points from today’s presentation are: check the UV index, be aware of the dangers of UV exposure from the sun and tanning beds, and when the UV index is over 3 remember to: slip on protective clothing, slap on a hat, slop on some sunscreen, seek shade, and slide on some sunglasses. It’s great to have fun in the sun but you need to be prepared and practice sun safety!
UV Beads

Since it’s hard to know when the UV rays are strong we are going to make a tool to help you know when to protect yourself.

"Hold up premade UV bead bracelet” These special UV beads will turn from white to purple when they are hit by UV rays to tell you to protect yourself. However, it’s still important for you to check the UV index before leaving the house so that you’re properly prepared to spend time outside.

Hand out packages of beads and have kids make bracelets. Ensure bracelets are tied like balloons. See the following pages for activities and experiments using the UV bead bracelets.

Activities

Testing UV Beads

Once bracelets are finished there are a variety of both indoor and outdoor experiments that can be done to test the beads.

Outdoor Activities

Test #1: What clothing protects us from the sun?

While outdoors, have the kids hide the bracelets under different articles of clothing for 20 seconds at a time. After the 20 seconds, bring the bracelets out from hiding. Has the UV light been able to get through the clothing?

Test #2: Shade

Have the kids gather in the shade and watch the beads turn pale due to the weaker UV light.

Test #3: Can UV light travel through water?

Materials required: Pail, water, towel

Have kids drop their bracelets in the water and watch to see if the colour fades. Make sure sunlight can reach the pail.

UV rays can travel through water. Remember water does not protect you from the sun so be sure to protect yourself when swimming.

Indoor Activities

Why do the UV beads turn white indoors? (because there are no UV rays)

Test #4: Flashlight

Materials required: flashlight or lamp

Have children predict if the flashlight/lamp on the beads will make them change colour. Shine the light on the beads to show them that the beads will not change colour because there is no UV light present.

Test #5:

Have children hold their bracelets up to the window and observe what happens to the beads. The beads will turn a pale purple as some UV rays do come through the window. It is important to protect yourself on long car rides!
SunSense Trivia
SunSense trivia questions are included in lesson plan. Students can either fill out the worksheet or you could have a mini trivia tournament.

SunSense Crossword and Word Scramble
Crossword and word scramble included in lesson plan kit.

Design a Poster/Flyer about Sun Safety
Have students create posters and flyers about sun safety (ie; sun safe practices, the 5 S’s, danger of UV rays, etc.) to put up around the classroom or in the school hallway to inform others!

Teach a Buddy
Have children create a presentation of what they’ve learned about sun safety and present it to some younger buddies (grade P-3).

SunSense Around the World
Have students choose a country close to the equator and research how the people who live there protect themselves from the sun. Example: Siestas in many Spanish countries.

Become Sun Scientists
Materials required: Newspaper, fruit, construction paper, scissors

Make predictions and try some of the following experiments:
- Place some newspaper in direct sunlight and another piece in a dark cupboard.
- Place a fruit in direct sunlight and another piece in the shade, both outdoors. A banana works well.
- Place some interesting shapes on a piece of coloured paper in direct sunlight and place a similar grouping in a dark cupboard.

Talk about how the sun caused the changes that were witnessed.

Make shade!
Materials required: seedling, shovel, watering can, anchors and string
Plant a tree in the school yard that will eventually provide shade for the children to play in. Explain that playing in the shade between 11am and 3pm is safest because UV rays aren’t as strong in the shade. Students can help dig the hole and water the tree after, you may need to anchor down the tree to ensure it grows straight. Contact your local nursery to find out what type of tree is best for your area.