SUNSENSE
Teaching Guide, Grade 4 to 6
PREFACE

Existing research confirms that there are compelling benefits to children playing and learning outdoors. We believe that appropriate sun safety habits are essential to maximize health and enjoyment. That is why the Canadian Cancer Society (Ontario division), Evergreen, and Ophea have collaborated to provide tools to support schools in fostering sun safety.

Education is one component of a comprehensive sun safety plan. Learning about sun safety increases knowledge and influences behavior. This teaching guide provide interactive lesson plans and activities to engage students in learning about best practices for sun safety.

Practicing sun safety is easy and important to protect your skin. Follow this lesson plan to set your students on track to be safe and healthy!

In addition to this guide, complimentary tools and resources along with additional information can be found online at the Canadian Cancer Society’s (Ontario Division) Sun Sense web page.

To learn more, please visit Cancer.ca/sunsense
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Introduction to the Teaching Guide

The Canadian Cancer Society’s Sun Sense program provides direct support to schools to create a sun safe environment and develop a Sun Sense policy to protect staff and students through education and awareness of sun safe practices. This teaching guide provides information about sun safety along with an interactive lesson plan to educate students about the dangers of ultraviolet radiation and to encourage sun safety practices.

In order to keep participants thinking about sun safety past a single lesson we have included activities to be done using the UV bracelets and luggage tags. UV bracelets and luggage tags can be ordered at sunsense@ontario.cancer.ca. The UV bracelets, along with the luggage tags, serve as a daily reminder to practice Sun Sense. Students should be encouraged to wear the bracelets and hang the tags on their backpacks.

It is recommended to keep the lesson plan to 20 minutes in order to keep the participant’s attention and focus. Additional activities are included in case you finish early or wish to do follow up activities during another lesson.

The Outdoors and Sun Safety

Research indicates childhood exposure to ultraviolet radiation (UVR) is an important contributing factor to the development of skin cancer in later life. Given students are at school during the highest risk period of the day – between 11a.m. and 3p.m – schools play a major role in both minimizing students’ exposure and positively influencing student behavior by establishing and reinforcing healthy sun safe habits.

Sun exposure and skin cancer
Skin cancer is the most common type of cancer in Canada and also one of the most preventable! While the cause of many cancers remains unknown, the reason for this most common cancer is too many sunburns and too much UVR exposure over many years.

1 in 7 people will be diagnosed with skin cancer in their lifetime; however, we know that this disease is largely preventable. People under the age of 18 are at the highest risk. Children and youth spend more time outside than adults do – in fact, 80% of people’s exposure to UVR occurs before the age of 18.

Staying inside is not the answer
As Canadian children are spending more time indoors, physical activity is decreasing, childhood obesity rates are soaring, and there is a diminished sense of community amongst children. These trends are impossible to ignore. It is imperative that children spend time outdoors.

By establishing effective routines, enhancing shade on school grounds, and developing and implementing sun safety policies, schools can ensure that children are enjoying a range of benefits associate with time in the outdoors while being sun safe.

During the lesson, students will learn:

- The importance of the sun
- The damaging effects of the sun
- What ultraviolet rays and the UV index are
- The Sun Sense guideline
Information for Teachers

We live in Canada, skin cancer doesn’t need to be a concern does it? Skin cancer is one of the fastest rising types of cancer in Canada. Although Canadians experience cooler temperatures and longer winters, it is important to know that in Canada sunlight is strong enough to cause skin cancer, premature aging of skin and harm to the eyes. The good news is, skin cancer is also highly preventable!

Skin cancer is generally categorized as either non-melanoma skin cancer or melanoma. Non-melanoma is the most commonly diagnosed cancer. Melanoma, while less common, is the most deadly. UVR from overexposure to the sun or use of indoor tanning beds is the main risk factor for skin cancers. It is estimated that children and adolescents who get 5 or more sunburns have double the risk of melanoma skin cancer.

But doesn’t the sun provide us with Vitamin D? Your skin produces Vitamin D when exposed to the sunlight, but you don’t need a tan to get benefits from the sun. For most people, just a few minutes -short casual, daily life exposure – will be enough. Getting Vitamin D from diet or supplements is safer than UV exposure.

Are there different types of UV rays? There are 3 Types of UV rays:

* UVA rays make up most of the sun’s natural light. They can penetrate deep into the skin and cause wrinkles and premature aging

* UVB rays are the main cause of sunburns and are nearly 1,000 times stronger than UVA rays

* UVC rays are short wave radiation and never reach the earth as they are filtered by the atmosphere

UV rays can get through clouds, fog and haze. Water, sand, concrete and especially snow can reflect and even increase the sun’s rays. It is important to not only protect your skin but your eyes as well and make sure the all products are protective against both UVA & UVB rays

What about tanning beds, are they safe? Indoors or outdoors – there is no safe way to get a tan. Tanning beds and sun lamps release UV rays that start the tanning process in the skin – just like the sun. Tanned skin is damage skin.

Research done by the International Agency for Research on Cancer shows that being exposed to UVR from indoor tanning equipment before age of 35 increase risk of melanoma (skin cancer). Some tanning beds expose you to 5 times more radiation that than the sun.
### GRADE 4

<table>
<thead>
<tr>
<th>Health &amp; Physical Education</th>
<th>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)</th>
</tr>
</thead>
<tbody>
<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>
</tr>
</tbody>
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### GRADE 5

<table>
<thead>
<tr>
<th>Health &amp; Physical Education</th>
<th>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)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Science</td>
<td>Understanding Life Systems 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>
</tr>
</tbody>
</table>

### GRADE 6

| Health & Physical Education | 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. |
Sun Sense Lesson Plan

The lesson plan provided here is a suggested format to use. Please do not feel limited by these guidelines or that you need to include all the information in your lesson. Adapt the questions or wording to suit your teaching style and your audience in order to get the most out of the lesson and to form a better connection with students.

A Power Point presentation is available for this lesson and can be downloaded at www.cancer.ca/sunsense. Additional activities using the UV beads are included in the next section of the guide and can be used either as part of this lesson plan or as a separate lesson.

Description: This lesson plan includes several questions (Appendix A) in order to avoid lecturing the children about what is right or wrong and to involve them as much as possible. This way the information is coming from the students rather than from you.

When asking questions, try to avoid yes or no answers and encourage children to give more detailed explanations. If you don't get the answers that you are looking for, try rephrasing the question. Remember to use discretion based upon the age and maturity of the group. The information that is provided should be appropriate for most age groups.

Most importantly, have fun!

Materials: Power point presentation, you may wish to bring props (hats, sunglasses etc.)
UV Bracelet Activities

Provide each student with a UV bracelet kit. You may want to make one ahead of time to show as an example.

Introduction to the lesson:
"As we said earlier it is hard to know when the UV rays are strong. We are going to make these bracelets and wear them to remind us when the UV rays are strong and we need to protect ourselves"

Explanation to give to children
About the UV beads:

* Special beads that turn from white to a colour in UV light only
* Other light or inside light from a light bulb doesn’t change them
* Heat doesn’t change them
* Only when they’re in the presence of UV light will they turn colour
* When there isn’t any UV light around (inside) they are white

The card on the back has many different colours which indicate the strength of the UV rays, your bead colour is **not** an indication of the strength of UV rays. When the colour is light you need to start taking precautions to protect yourself. If the beads are dark it means the sun is very strong and you need to take more precautions to protect yourself. Remember that these bracelets are for when you are already outside, to help remind you to continue protecting yourself from the UV rays. You still need to check the UV index every day before you go outside, and make sure you are protected from the UV rays before you leave the house.

Note: The beads react to UV light because they have been treated with a special chemical that is sensitive to this kind of light.

Once the children have finished making their bracelets the group can begin to experiments. There are experiments for both outside and inside. Each experiment can be done while the children wear their bracelets. If you are unable to try the experiments with the students for some reason (e.g. it’s raining) you can still explain to them how they work. On these days, check the list of indoor activities for the bracelets and other fun games. Have them guess what will happen and encourage them to test their bracelets when the weather is better and they are outside at home, in the park, etc.

**Tips for making the bracelets with students**

* Provide a plate to students to place all of their beads in the plate so they do not roll away.
* Remind students that they will need to hold up one end of the string or keep it laying in the plate so the beads don’t fall off
* Tie the strings, like a balloon – place the bracelet around the students wrist, take both ends of the string and put them together (ends pointing in the same direction). Wrap them around your finger and pull both ends through the loop. Pull the knot to the right spot, so the bracelet does not fall off the child’s wrist. The bracelets will stay together better with this type of knot.

**Note:** Be prepared for a few flying beads.
Outside Activities

Test #1: Does clothing really protect us from the sun? Are some materials better at blocking UV rays than others?

While outdoors, have the students 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?

Test #2: Shade

Have the students gather in a shady spot and watch what happens to the colour of the beads (the beads will turn pale in colour). What does this mean? (The UV light isn’t as strong in the shade)

Test #3: Can UV light travel through water?

Materials required: 4L ice cream pails, water and towel
Fill the pails with water. While wearing their bracelets, have students gather around the pails and place their bracelets underwater. What happens to the colour? What does this tell them about UV light? Note: Make sure the light can’t reach the pail. UV light travels through water. Remember, you are not protected from the sun when you are swimming in the pool or in the lake, and UV rays will reflect off of the water.

Inside Activities

If you are outdoors with the students you will want to head indoor where they can see the beads turn white. Ask them why this happens (no UV rays present)

Test #4: Flashlight

Materials required: flashlight. (Optional: using indoor light will produce the same results)
While inside ask the children if shining a flashlight on the beads will get them to change colour. Why doesn’t this work? (the beads will only react to the UV light. An indoor light from a flashlight does not contain UV light)

Test # 5 – Can UV light go through windows?

While indoors, have the kids hold their bracelets up to the light of a window. What happens to the colour of the beads? (The UV beads are pale in colour demonstrating that some degree of UV light can travel through windows) When traveling on a long distance car trip, should you remember to protect yourself? What about truck drivers? Does anyone have tinted windows in their car? What about tinted sunglasses?

Test # 6 - Observing the Beads

Watch the beads and record any changes that you notice during the day. When you go outside do the beads change color? When you go back inside, away from sunlight, do the beads lose their color?

What causes the beads to lose color?
Additional Activities

Packing for Sun Sense

Materials required: use either real props or images of various items, include all of the sun safety items students should have as well as others that are not needed for sun protection.

Lay out all the items so students can see the options, and have them select the items they should each have in their backpack each to protect them from UVR. This a great time to introduce the luggage tag and have them attach it to their backpack and discuss that the tag will remind them what to put in their pack each day.

Design a Flyer/Poster about the Danger of UV Rays

Have students create a flyer or poster.
Introduction to activity: Use what you have learned about UVR to develop a UVR information poster to inform young people about the dangers of UVR. Your target audience will be students your age and your design should encourage them to actually pick it up and read it! How would you convince someone that exposure to something you can’t see or feel can be harmful to your skin and possibly lead to skin cancer?

Become Sun Scientists for a week

Try some of these experiments. Make predictions about what the students think will happen. Do it and see if they were right.

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 a coil of clay or play dough in direct sunlight and another piece in the shade. Place some interesting shapes on a piece of coloured paper in direct sunlight and place a similar grouping in a dark cupboard.

Talk about the changes the sun has caused in each experiment you tried. Record your findings. Discuss how the sun’s power cannot be seen but the changes it causes can. Talk about the power of the sun to change our skin by burning.

Make a Poster or Banner!

Create a large poster or banner with sun safety slogans to hang in your classroom. You can also ask every grade to make one part of the banner, then piece together and hang somewhere in the school that everyone can see.


Going on a Holiday

Have each student choose their preferred holiday location. Ask them to find the UV index readings for these countries on the internet. In what ways might students need to change their behaviour compared to their home environment? What other factors might they need to consider in choosing sun protection methods, other than the UV index, e.g. temperature, time of day, and surrounding surfaces such as water or snow?

Ask students to develop a travel brochure for their chosen city or country, and include sun protection tips. Students should ensure that they consider factors like time of year in developing their advice.
Appendix:
Lesson Plan Script
SLIDE 1: Title Slide

SLIDE 2: Outdoor Activities
Q. What activities do you like to do in the summer?  
A. Swimming, camping, biking, going to the park.

Lots of those activities are done outside in the sun.

SLIDE 3: Importance of the Sun
Q. What are some good things that the sun does?  
A. Provides light, warmth, energy, helps our plants grow and gives us Vitamin D.

But even though the sun is a good thing we need to be careful when we are outdoors.

SLIDE 4: Damaged Skin
Q. Do you know what happens if we get too much sun?  
A. We can get sunburn, heat stroke, or a tan.

Even a tan is considered skin damage and accumulating skin damage over time, especially as a child increases your chances of developing skin cancer, which is not a good thing.

Q. There are 3 main types of skin cancer. Does anyone know what they are?  
A. Basal cell carcinoma, squamous cell carcinoma (both of these are non-melanoma) and melanoma.

Q. Which cancer do you think is the most harmful?  
Basal cell and squamous cell skin cancer are the most common types of skin cancer but melanoma is the deadliest form of skin cancer.

Q. Do you know what part of the sun gives us skin damage?  
A. Ultraviolet (UV) rays

SLIDE 5: UV index
Q. How do you know when the UV rays are strong?  
A. We cannot see or feel UV rays. So just like we want to know the temperature outside before we get dressed, we will want to know what the UV Index is going to be so we can prepare for the sun’s rays for that day.

Q. Has anyone heard of the UV Index?  
A. Sometimes they talk about it on TV or radio. The UV Index goes from 0 to 11. That number tells you how strong the UV rays are. The higher the number, the more protection you need to take when you go out in the sun. On days when the UV Index reaches 3 or more (moderate), you need to be extra careful to protect your skin.

Optional: For example, if you listen to the radio in the morning, they may say “Today the UV Index is high” or “The UV index is 7 today”. If you hear them say that, what does that mean you should do? You should protect yourself. In general, the UV Index in Canada can be 3 or more from 11 a.m. to 3 p.m. between April and September, even when it’s cloudy.

Q. Raise your hand if you checked to see what the temperature is today.  
A. Many hands will go up.

Q. Keep your hand up if you checked to see what the UV Index is today.  
A. Few hands will remain up.

Q. If the UV Index is 3 or higher, what precautions should you take to protect yourself?  
Let the students shout out different answers and then go over the sunsense guidelines in the next few slides.
SLIDE 6: WEAR A BUCKET HAT
(Teaching Aid: Different types of hats. The child that says hat comes up and one other volunteer. One child wears a baseball cap and the other a bucket or sun hat.)

Q. Why is the bucket/sun hat better than the baseball cap?
A. The brim goes all the way around your head to protect your ears, back of your neck and also your eyes. These areas need extra protection.

SLIDE 7: PLAY IN THE SHADE
Q. Can you get sunburn when it’s cloudy?
A. Yes, the UV rays can get through light clouds, haze and fog.

Q. Where can you find shade?
A. Tree, play structure, tent, awning, umbrella, etc.

Q. What can you bring with you to create shade?
A. Umbrella, tent, etc.

Q. What time of day are the UV rays the strongest?
A. Between 11 am and 3pm.

SLIDE 8: Rhyme about Shadows
I have a little rhyme for us to say, so we remember the best time is to play.
“When your shadow is short, stay out of the sun.
When your shadow is tall, go out and have fun!”

Now, let’s say it together!
“When your shadow is short, stay out of the sun.
When your shadow is tall, go out and have fun!”

SLIDE 9: PUT ON SUNSCREEN
(Teaching Aid: Sunscreen bottle with an SPF 30+)

Q. How long before going outdoors should you put on sunscreen on?
A. You should put sunscreen on least 20 minutes before going outside. If you forget to put it on before going outside, it’s not too late! Put it on as soon as you can.

Q. How often should you re-apply sunscreen?
A. Read the label and follow the instructions for reapplying sunscreen, especially after swimming, exercising or sweating, it is usually at least every two hours or after you swim or sweat.

Q. If you also need to wear insect repellent, which do you put on first?
A. Put your sunscreen on first. This allows it to absorb into your skin properly. Try to avoid products that have both sunscreen and insect repellent as they don’t work well together in the same product. Be sure to read and follow the instructions for use on both containers to make sure that each product is applied properly.

Q. What is the minimum Sun Protection Factor (SPF) you should use?
A. SPF 30 or higher.

Q. Did you know that sunscreen expires? How can you tell?
A. (Pass out your bottle of sunscreen to a student and ask them to find the expiry date.)

Q. What do you do if you have expired sunscreen?
A. Throw out the old bottle and buy a new one, because it will not protect you as well once it has passed its expiration date.

Q. Should you wear sunscreen in the winter?
A. Yes. Remember it is not the heat that gives us sunburn but the UV rays which are invisible. The UV rays reflect off the snow. Most of your body is already covered but don’t forget to put sunscreen on your face.

Your lips are skin and need protection too. You can buy lip balm that has an SPF just like your sunscreen has. Be sure to reapply it just like you would your sunscreen.
SLIDE 10: COVER UP
(Teaching Aid: Different types of clothing.) Have volunteers put on different types of clothing and make a mini fashion show to explain proper types of clothing.

Q. What is the best type of clothing to wear?
A. Clothing with long sleeves and long pants. Can be loose fitting for the season but choose clothing with fabric that is tightly woven or UV-protective labelled.

Q. What is better at protecting you from UV rays: wet or dry clothing?
A. Although it is a good idea to wear a shirt when you are swimming, when your clothing is dry it will protect you more than when your clothing is wet.

SLIDE 11 WEAR SUNGLASSES
(Teaching Aid: Different types of sunglasses, the child that says that sunglasses come to the front with another volunteer, one wears sunglasses with light lenses and skinny sides and the other wears sunglasses with dark lenses and thick sides.)

Q. What kind of sunglasses are best to wear?
A. Contains both UVA (aging rays) & UVB (burning rays) protection.
   The label might have UV 400 or 100% UV protection on it.
   Choose close fitting sunglasses in a wrap-around style.

Q. Why are having wrap-around sunglasses or thick sides better than thin sides?
A. It protects your eyes from all angles.

SLIDE 12: Tanning Beds
Q. Is it safe to get a tan from a tanning bed?
A. There’s no safe way to get a tan. An indoor tanning device, such as a tanning bed or lamp, causes cancer. These devices give off ultraviolet radiation (UVR), which is a known carcinogen. In other words, tanning beds are no longer something that we think probably causes cancer – we know they cause cancer. UVR causes skin damage, including sunburns, premature skin aging, wrinkles, skin cancer and cataracts. Tanned skin is damaged skin. When the tan fades, the damage is still there. Some tanning beds can expose you to 5 times more radiation than the sun.

SLIDE 13: Vitamin D
Q. Some people think they have to get a tan to get vitamin D. Why do we need vitamin D?
A. Tanning beds are not a safe way to get your vitamin D. Vitamin D is needed for healthy bones and muscles, especially in students and the elderly. There is growing evidence that vitamin D may reduce risk of some types of cancer, particularly colorectal and breast cancers. For the majority of people, incidental exposure to the sun, combined with supplements and dietary intake of vitamin D, provides adequate vitamin D.

Q. How else can you get your vitamin D?
A. You can get vitamin D from a few minutes of exposure to sunlight, in your diet (especially if you eat foods fortified with vitamin D), or by taking vitamin supplements. Be sure to talk to your doctor before you start taking supplements.

Q. What do you do if you find something?
A. Tell your guardian and they can make an appointment with your doctor. Your doctor will decide if you need to see a dermatologist.
SLIDE 14: Check your Skin

Q. how often should you examine your skin?
A. At least once a month

Q. What are the main changes you could look for?
A. Changes generally fall under the ABCDE classifications:
   - 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.

Q. What do you do if you find something?
A. Tell your guardian and they can make an appointment with your doctor. Your doctor will decide if you need to see a dermatologist.

Conclusion

*This is an important part of the presentation since we want to encourage the children to wear the beads beyond this one day. Please be sure to emphasize this in your wrap up.*

If you wear your UV bead bracelet every day, it will serve as a reminder for you so you don’t forget how to protect yourself. You can also have a luggage tag to place on your backpack to remind you to pack your sun safety gear every day (hat, sunglasses, shirt, sunscreen, lip balm). Remember, UVR is not related to temperature so you can still get sunburn on a cool, cloudy day and in winter too. Enjoy the sun safely. Protect your skin, protect your eyes. Don’t forget to: wear at bucket hat, seek shade, wear sunscreen, cover up, wear sunglasses.