

# The Sun Doesn't Love You: Harmful UV Rays & Skin Cancer

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*"No! Don't throw me iiiiin!" Jacob heard Madison squeal as he chased the junior high girl-next-door down the beach.*

*"Jacob, she needs her sunscreen first! Madison!" yelled the lanky girl's mother Michelle.*

*Jacob's mother Jenn gave her son a stern look, but neither kid acknowledged it and scuttled farther down the shoreline. Shrugging it off, Michelle and Jenn turned their attention to setting up the beach umbrella and unpacking their seaside essentials, which included sunglasses, water bottles, reading materials, a Frisbee, and SPF 15 sunscreen....*

In honor of UV Safety Month, I thought it appropriate to spread awareness of harmful UV rays as many dash to the beach after lifted stay-at-home orders from the COVID-19 pandemic. We've all heard the cautions about the sun's harmful rays, but I have to admit, I didn't know this:

Just ONE blistering sunburn from harmful UV rays can DOUBLE your chance of developing melanoma.<sup>1</sup>

While Michelle and Jenn do have some wins in their beach bag, there are two major blunders. Can you identify them? Let's review some facts:

## A Trifecta of Radiation

The sun emits its energy as invisible, ultraviolet (UV) radiation. Overexposure of these rays on unprotected skin cause temporary and permanent damage. There are three types of UV rays:<sup>2</sup>

UVA	UVB	UVC
UVA rays have the least energy, but can cause long-term damage to skin cells such as aging (wrinkles) and some skin cancers.	UVB rays can damage skin cells' DNA and cause sunburns and most skin cancers.	UVC rays have the most energy and don't reach our atmosphere naturally. They are also seen in man-made sources, such as UV sanitizing bulbs used to kill germs.

UV rays can cause damage even on cloudy/overcast days and are strongest:<sup>3,4</sup>

- Between 10 a.m. – 4 p.m.
- During the spring and summer months
- Near the equator
- At high altitudes
- Reflecting off surfaces (e.g. water, sand, snow, pavement)

### Effects of Harmful UV Rays

Serious damage from harmful UV rays can cause different types of skin cancers:

	Basal and Squamous Cell Skin Cancer <sup>5</sup>	Melanoma Skin Cancer <sup>6</sup>	Merkel Cell Skin Cancer <sup>7</sup>
<b>Overview</b>	The most common form, this cancer starts growing in the top layer of the skin (epidermis) and is diagnosed in 3.3 million Americans annually.	This is a less common, but more dangerous skin cancer because it spreads easily. Rapidly rising over the decades, it is estimated that close to 7,000 Americans will die of melanoma in 2020.	A rare skin cancer, MCC is hard to treat if it spreads beyond the skin, making it one of the most dangerous types. Out of 2,000 cases diagnosed each year in the U.S., 4 out of 5 are over age 70.
<b>Risk Factors</b>	<ol style="list-style-type: none"> <li>1. Exposure to UV Rays, Arsenic and Radiation</li> <li>2. Light-Colored Skin</li> <li>3. Increased Age</li> <li>4. Males</li> <li>5. Previous Skin Cancer or Severe Skin Inflammation/Injury</li> <li>6. Psoriasis Treatment</li> <li>7. Rare Conditions: Xeroderma Pigmentosum (XP) and Gorlin Syndrome</li> <li>8. Weakened Immune System</li> <li>9. HPVs</li> <li>10. Smoking (for squamous cell skin cancer)</li> </ol>	<ol style="list-style-type: none"> <li>1. Exposure to UV Rays</li> <li>2. Moles</li> <li>3. Fair Skin and/or Freckling, Red and Blond Hair, Blue and Green Eyes</li> <li>4. Family History of Melanoma</li> <li>5. Previous Skin Cancer</li> <li>6. Weakened Immune System</li> <li>7. Increased Age</li> <li>8. Males</li> <li>9. Xeroderma Pigmentosum (XP)</li> </ol>	<ol style="list-style-type: none"> <li>1. Common Virus: MCV</li> <li>2. Exposure to UV Rays</li> <li>3. Moles</li> <li>4. Light-Colored Skin</li> <li>5. Increased Age</li> <li>6. Males</li> <li>7. Weakened Immune System</li> </ol>
<b>Treatment Options</b>	<ul style="list-style-type: none"> <li>• Surgery</li> <li>• Local Treatments (e.g. cryotherapy, chemical peeling)</li> <li>• Radiation</li> <li>• Systemic Chemotherapy</li> <li>• Targeted Drug Therapy</li> <li>• Immunotherapy</li> </ul>	<ul style="list-style-type: none"> <li>• Surgery</li> <li>• Immunotherapy</li> <li>• Targeted Drug Therapies</li> <li>• Chemotherapy</li> <li>• Radiation</li> </ul>	<ul style="list-style-type: none"> <li>• Surgery</li> <li>• Radiation</li> <li>• Chemotherapy</li> <li>• Immunotherapy</li> </ul>

## The UV Index

Developed by the EPA and National Weather Service, a higher number equals greater risk of UV exposure:



This index is often communicated in daily local weather reports, but you can enter your zip code [here to find yours](#).

No watch or signal to check the time? Just look at your shadow! If your shadow is taller than you are (in the early morning and late afternoon), your UV exposure is likely to be lower. If your shadow is shorter than you are (around midday), you are being exposed to higher levels of UV radiation and should seek shade to protect your skin and eyes.<sup>9</sup>

## Protection from Harmful UV

Avoiding sunlight is not always practical to keep yourself protected from harmful UV rays. Plus you may want to absorb some rays responsibly so your body can make Vitamin D. (*Note: always check with your healthcare practitioner to see what is right for you*). So, here are some tips to keep you safe while outdoors this summer:<sup>10</sup>

- **Shade Your Skin...** out of the sun and/or with pants/long-sleeved shirts [look for UV Protection Factor (UPF) values on the labels]. Being sheltered doesn't necessarily mean you're *shaded* (beware of windows).
- **Slather the Sunscreen...** with broad spectrum, water resistant, and a Sun Protection Factor (SPF) more than 30. My favorites contain zinc oxide and titanium dioxide as active ingredients. Sunscreen should be applied 30 minutes before sun exposure to thoroughly absorb into the skin, offering fullest protection. Don't forget to check expiration dates and reapply every couple hours – more often if you've swam or sweat.
- **Wear a Hat...** with a 2-3" brim all around and a dark, non-reflective underside. Straw hats are not effective here. If you don't have a hat or a shade cap, drape a large hanky/bandana under a baseball cap to protect the back of your neck/ears.
- **Sport those Shades...** with large-framed or wraparound sunglasses that absorb UV up to 400 nm and/or meets ANSI UV requirements. You may see these sunglasses advertised as "UV 400 protection" or "100% protection against UVA & UVB." The skin around the eyes is very delicate and long sun exposure can lead to certain eye diseases.
- **Scrutinize Your Skin...** with monthly self-examinations and annual skin examinations by your healthcare practitioner to help identify melanoma early.
- **Avoid Tanning Beds...** and sun lamps, period.

## Tanning Alternatives<sup>11</sup>

Many alternatives to sunbathing have been introduced, but not all are considered safe. Even when using these alternatives, it's important to still apply sunscreen when outside for an extended period of time.

SAFE	ARE NOT/MAY NOT BE SAFE
Bronzers, including tinted moisturizers and brush-on powders are made from FDA-approved color additives for cosmetic use. They are meant to be temporary and washed off.	Sunless Tanning Pills contain canthaxanthin (approved by the FDA as a food coloring only). The typical dose recommended by tanning pill manufacturers may be toxic, which may impair vision, skin and liver function.
Sunless/Self-tanning Lotions commonly contain the FDA-approved color additive DHA and tends to wear off after a few days.	Tanning Accelerators with tyrosine have not shown to be effective and may be dangerous. They are not approved by the FDA.
Tanning Sprays, used both at home and by salons, containing DHA are not approved as an inhalant and should protect the mouth, eyes and nose when using.	

Now that you have the facts, let's turn back to Michelle, Jenn and the teens. We know it was smart of them to bring a beach umbrella, sunglasses and sunscreen, but where did they go wrong? Can they turn it around?

*"Oh barnacles," Jenn said, disappointed. "We only brought SPF 15."*

*"No good?" asked Michelle.*

*"Well, I know that no sunscreen protects you completely, but I meant to grab at least a 30 broad spectrum. That filters out about 97% of UVB and UVA rays, versus 93% of UVB only," explained Jenn. "That's okay, we'll just need to make sure they re-apply it more often. Every 30 minutes in the sun with just SPF 15 is the same as getting 2 minutes of UVB rays unprotected. WAIT! They haven't applied at all yet! Kids...!" Jenn hollered.*

*Michelle grabbed her wallet and rose.*

*"Where are you going?" Jenn asked.*

*"If we didn't remember they needed to lotion up 30 minutes before we got out here, we're not going to remember to remind them every half hour! I'm off to find a store along the boardwalk with more suitable sun protection." Michelle tramped across the sand as they heard Madison squeal again... this time followed by a splash.*

<sup>1</sup>[Melanoma Research Foundation](#), "Facts About Melanoma"

<sup>2</sup>[American Cancer Society](#), "What is UV radiation?"

<sup>3</sup>[CDC](#), "Sun Safety Tips for Families"

<sup>4</sup>[American Cancer Society](#), "How Do I Protect Myself from UV Rays"

<sup>5</sup>[American Cancer Society](#), "Basal and Squamous Cell Skin Cancer"

<sup>6</sup>[American Cancer Society](#), "Melanoma Skin Cancer"

<sup>7</sup>[American Cancer Society](#), "Merkel Cell Skin Cancer"

<sup>8</sup>[American Cancer Society](#), "Be Safe in the Sun"

<sup>9</sup>[US Environmental Protection Agency](#), "UV Index Scale"

<sup>10</sup>[American Cancer Society](#), "How Do I Protect Myself from UV Rays?"

<sup>11</sup>[American Cancer Society](#), "Tanning Pills and Other Tanning Products"