



Protect the Skin You're In – UV Bead Lab

Read and highlight important information

Introduction:

Sunburn is a condition resulting from an over-exposure of the skin to Ultraviolet rays found in sunlight. Everyone, even dark-skinned people, is at risk for sunburn. Fair-skinned, blue-eyed blonds and redheads are especially susceptible to being sunburned.

We all need exposure to the sun, as it is our primary source of vitamin D, but it does not take much time in the sun for most people to get the needed amount. When we stay in the sun for periods of time without skin protection, the sun's UV rays can cause minor to major damage. Damages from the sun can be skin damage, sun poisoning, eye damage, immune system suppression, and in some cases even cancer. It is not uncommon for people living in Florida who are less than 30 years of age, to have developed skin cancer. The sun also weakens the skin's elasticity leading to premature aging, early wrinkles, and a tough leathery look. Over-exposure also leads to the development of flat, scaly, reddish patches called solar Kerasotes, which sometimes are precancerous. The most serious consequence of over-exposure to the sun is skin cancer. Over 1,000,000 new cases of the most common form of cancer occur each year (www.cancer.gov). No tan is a safe tan!

Not all sunlight is "equal" in UV concentration. The intensity of the sun's rays depends upon the time of year, as well as the altitude and latitude of your location. UV rays are strongest during summer. Remember that the timing of this season varies by location. Extra protection is also required near the equator, where the sun is strongest, and at high altitudes where the air and cloud cover are thinner, allowing more damaging UV rays to get through the atmosphere. Even during winter months, if your family goes skiing in the mountains, be sure to apply plenty of sunscreen; UV rays reflect off both snow and water, increasing the probability of sunburn. Even on cloudy, cool or overcast days, UV rays travel through the clouds and reflect off sand, water, and even concrete. Clouds and pollution don't filter out UV rays, and they can give a false sense of protection. This "invisible sun" can cause unexpected sunburn and skin damage. Often people are unaware that they are developing sunburn on cooler or windy days because the temperature or breeze keeps their skin feeling cool on the surface. In this lab, we are going to investigate the effectiveness of some common methods of sun protection.

Purpose:

Which methods of sun protection are most effective for protecting the skin from harmful UV rays?
Sunscreen, different clothing, sunglasses, water

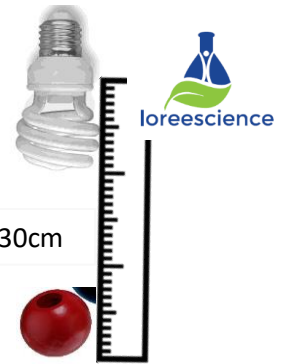
Hypothesis: *Make a prediction*

Materials:

UV bead
Plastic baggie
iPad timer & camera

Ruler
Beaker with water

Name: _____

TAKE A PICTURE AFTER EACH STEP

- Put the bead under the **black light** for 1 minute.
Always hold the light **30 cm** from the bead.
See how much it changes colour. This change is considered a 5 on the scale.
- Use a pencil crayon the same colour as you bead to complete the scale below.

1	2	3	4	5
No change in colour				Most change in colour

- Determine how **light** from the **flashlight** affects the beads on your bracelet.
Turn the light on and hold it 30 centimeters away from the bead for 1 minute.
Record observations and assign a colour rating..



- Investigate the effectiveness of **3 different sunscreens**.
Put your bead in a plastic baggie.
Put a drop of sunscreen on the baggie and spread it around.
Shine the UV light over the bead in the bag for 1 minute.
Keep light 30 cm from the bead.
REUSE bag for each sunscreen
Record observations and assign a colour rating.



- Investigate how well **sunglasses** work:
Hold your beads in your hand and cover them with a lens of the glasses.
Make sure the bead is completely covered.
Hold the light 30cm away from the lens and turn it on for 1 minute.
Record your observations and assign a colour rating.

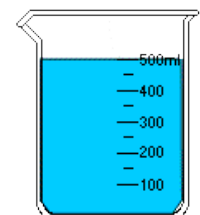


- Investigate how light and dark **fabrics** work:
Place bead on the table and cover them with one layer of fabric.
Hold the light 30cm away from the bead and turn on for 1 minute.
Record your observations and assign a colour rating.



- Investigate how well **shade** works as protection:
Place your bead on the table and use the sheet of card stock to shade them from your light.
Hold the light 30cm away from the beads and turn on for 1 minute.
Record your observations and assign a colour rating.

- Investigate how well **water** works as protection:
Place your bead in the beaker of water.
Use your ruler to push them to the bottom of the beaker.
Hold the light 30cm away from the beads and turn on for 1 minute.
Record your observations and assign a colour rating.



Data & Observations:

Condition	Starting Colour (Scale 1-5)	Colour After 1 minute (Scale 1-5)	Is it a good way to protect from UV light?	Other Observations
Black light				
Flashlight				
Sunscreen #1 Brand: SPF _____				
Sunscreen #2 Brand: SPF _____				
Sunscreen #3 Brand: SPF _____				
Sunglasses				
Dark Colour Fabric				
Light Colour Fabric				
Water				

Conclusion/Wrap-up Questions:

1. Which methods of sun protection did you find to be the **most** effective?
2. Which methods of sun protection were **least** effective?
3. What are some consequences of not protecting your skin from the sun? (Name at least 2)
4. Are tanning booths a safe way to get a tan without having to worry about skin damage? Why or why not?