

Curriculum Unit  
Title

Ultraviolet Solar Radiation: Friend or Foe

Author

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**KEY LEARNING, ENDURING UNDERSTANDING, ETC.**

The light energy that comes from the sun is actually composed of a series of different wavelengths. The highest energy forms UVA, UVC, and UVB, while invisible, can be both beneficial and harmful, depending on the nature of exposure. Science and engineering have helped humans create ways to use and/or block these waves.

**ESSENTIAL QUESTION(S) for the UNIT**

What does sunlight consist of?  
What are the harmful effects of solar radiation and how do we avoid them?  
What are the beneficial effects and how do we balance the risks?

**CONCEPT A**

The Earth's atmosphere determines how much and what type of solar energy reaches the surface.

**CONCEPT B**

Exposure to ultraviolet radiation can cause damage to the skin and eyes.

**CONCEPT C**

There are health benefits to sun exposure.

**ESSENTIAL QUESTIONS A**

How does the Earth's atmosphere affect solar radiation?

**ESSENTIAL QUESTIONS B**

How does solar radiation affect the skin and eyes and what can be done to protect them?

**ESSENTIAL QUESTIONS C**

How can we get the benefits of solar radiation while minimizing the risks?

**VOCABULARY A**

Troposphere, stratosphere, mesosphere, thermosphere, ionosphere, wavelength, ultraviolet radiation, spectrum, tilt, altitude, latitude

**VOCABULARY A**

Squamous cell, basal cell, melanoma, mutation, cornea, retina, cataracts, melanin, sun protection factor,

**VOCABULARY A**

Vitamin D synthesis, UVC sterilization, Seasonal Affective Disorder, Rickett's Disease, Endocrinologist

**ADDITIONAL INFORMATION/MATERIAL/TEXT/FILM/RESOURCES**

Hoel, David G., Marianne Berwick, Frank R. De Gruijl, and Michael F. Holick. "The risks and benefits of sun exposure 2016." *Dermato-endocrinology*. 2016. Accessed October 28, 2018. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5129901>. Great resource for teacher background knowledge.