

Criterion D - Reflection on the Influence of Science Essay

How does the sun harm us?

Essay due Friday, 16 October before 20:00

[Video Introduction](#)

Write an 800-1000 word essay which describes how the sun can harm us and a science-based solution to the problem. Discuss the benefits and limitations of the solution, giving examples and specific information about the effects on one factor: **moral, ethical, social, economic, political, cultural or environmental factors**.

- Use data and statistics to support your arguments wherever possible.
- Include an MLA bibliography with the title, URL and date of publication for each source.
- Any plagiarism will result in a level of 0.
- A good place to find useful sources is Facts on File: Science <http://www.fofweb.com/Science/>

Suggested essay structure

Paragraph 1- Introduction to the problem

Describe in detail one way that sun is harmful to humans, society or living things.

Paragraph 2-Science-based solution

What is the scientific or technological solution to the problem and how does it work?

Describe the science in appropriate detail (relating it to science ideas and concepts studied in class)

Paragraph 3-Benefit

Describe a benefit of the science-based solution

Paragraph 4 -Limitation

Describe a problem with the science-based solution

Paragraph 5 -Conclusion

How effective is the science-based solution overall? What predictions can be made about the future of the solar problem and the science-based solution?

References

These should be formatted as in the ISA 8th Grade Science Guide.

Possible topics and valid links:

General Background:

<http://www.theozonehole.com/uvrays.htm>

<p>Skin exposure to UV light causes sunburn</p> <p>http://www.scientificamerican.com/article/how-does-sunscreen-protect/</p> <p>http://www.livescience.com/38039-what-causes-sunburns.html</p>	<p>Skin exposure to UV light may initiate melanoma</p> <p>http://melasciences.com/melanoma</p> <p>http://www.mayoclinic.org/diseases-conditions/melanoma/basics/causes/con-20026009</p>
<p>Eye lens exposure to UV light may cause cataracts</p> <p>http://www.livescience.com/34708-cataract-symptoms-diagnosis-treatments.html</p> <p>http://www.allaboutvision.com/sunglasses/spf.htm</p>	<p>Solar wind may cause power outages</p> <p>http://earthsky.org/human-world/solar-storms-can-cause-power-grids-to-fail-at-lower-latitudes</p> <p>http://www.findingdulcinea.com/news/science/2009/march/Severe-Solar-Flares-Could-Cause-Catastrophic-Power-Outage-in-United-States.html</p>
<p>Satellites may be damaged during solar storms</p> <p>http://www.smithsonianmag.com/science-nature/what-damage-could-be-caused-by-a-massive-solar-storm-25627394/?no-ist</p> <p>http://hesperia.gsfc.nasa.gov/sftheory/spaceweather.htm</p>	<p>Solar wind may disrupt communication.</p> <p>http://classroom.synonym.com/solar-flares-affect-communication-23537.html</p> <p>http://www.radio-electronics.com/info/propagation/ionospheric/solar-flares.php</p> <p>http://www.solarstorms.org/Scommun.html</p>
<p>UV rays are killing wildlife</p> <p>http://www.actionbioscience.org/biodiversity/howse.html#primer</p> <p>http://earthobservatory.nasa.gov/Features/UVB/uvb_radiation2.php</p>	<p>Astronauts are exposed to dangerous solar radiation when they are in space or on the Moon/Mars</p> <p>http://science.nasa.gov/science-news/science-at-nasa/2005/07oct_afraid/</p> <p>http://www.space.com/3247-astronauts-sleep-safety-solar-flare.html</p> <p>http://www.universetoday.com/92897/can-solar-flares-hurt-astronauts/</p>

Essay Template:

Problem: What is a harmful thing that the sun can cause?

Scientific details how the sun is harmful:

Describe the science-based solution to the problem. What is it? How does it work? Who invented it and when.

Identify the **benefits** of this solution?

1.

2.

3.

Discuss a **benefit** in detail and give specific information and/or examples. Connect this benefit to one of the factors: moral, ethical, social, economic, political, cultural or environmental

Identify limitations to the science-based solution:

1.

2.

3.

Discuss a **limitation** in detail and give specific information and/or examples. Connect this limitation to one of the factors: moral, ethical, social, economic, political, cultural or environmental

Conclusion: Evaluate the science-based solution by comparing the benefits vs. the limitations. What are future predictions concerning this problem and science-based solution.

References: MLA format, with in-text references.

1.
2.
3.
4.
5.
6.
7.

Criterion D

Reflection on the Influence of Science Essay

How does the sun harm us?

		<i>Level 1-2</i>	<i>Level 3-4</i>	<i>Level 5-6</i>	<i>Level 7-8</i>
<i>Describe the ways in which science is applied and used to address a specific problem or issue</i> □		□ state the ways science is used to solve a particular issue	□ outline the ways science is used to solve a particular issue	□ summarize the ways science is used to solve a particular issue	□ describe the ways science is used to solve a particular issue
<i>Discuss and Analyze the various implications of using science and its application in solving a specific problem or issue.</i> □		□ state the implications of the use of science to solve a specific problem or issue, interacting with a factor	□ outline the implications of the use of science to solve a specific problem or issue, interacting with a factor	□ describe the implications of the use of science to solve a specific problem or issue, interacting with a factor	□ describe and analyze the implications of the use of science to solve a specific problem or issue, interacting with a factor
<i>Apply scientific language effectively</i> □		□ apply scientific language to communicate understanding but does so with limited success	□ sometimes apply scientific language to communicate understanding	□ usually apply scientific language to communicate understanding clearly and precisely	□ consistently apply scientific language to communicate understanding clearly and precisely
<i>Document the work of others and sources of information used</i> □		□ document sources, with limited success	□ sometimes document sources correctly	□ usually document sources correctly	□ document sources completely

MYP Command Terms- Terms for this task are highlighted:

Analyze	Examine by breaking down into important parts, studying their relationships and interpreting information to reach conclusions	Explore	Discover new information through different means
Annotate	Add brief commentary or explanatory notes to a diagram, graph or written work	Formulate	Gather information and concepts to make an argument or conclusion
Apply	Use knowledge and understanding in response to a given situation or real circumstances; to put into action	Identify	Recognize the correct answer from a number of possible answers
Argue	Persuade or influence (another) by presenting reasons for or against.	Infer	Make a reasonable assumption or conclusion that is based on given facts or circumstances
Calculate	Determine an answer with numbers	Interpret	Recognize patterns and draw conclusions from given information
Class	Arrange or organize according to class or category	Investigate	Observe, study or make a detailed examination in order to gather facts and reach new conclusions
Comment	Give a fact or opinion about a calculation or statement	Justify	Give valid reasons to support an answer
Compare	Consider or describe similarities of two (or more) items or situations. Refer to both (all) of them throughout.	Label	Add titles or brief explanations to a diagram or graph
Construct	Create by arranging ideas, terms, concepts or materials	List	Give a sequence of brief answers (with no descriptions)
Contrast	Consider or describe the differences of two (or more) items or situations. Refer to both (all) of them throughout.	Measure	Find the value, quality, or effect of
Deduce	Reach a conclusion from certain information by reasoning	Outline	Create a general plan showing important parts/features but no detail; a brief explanation
Define	Give the meaning of a word, phrase, concept, or physical quantity	Predict	Give an educated guess for a possible outcome (what will happen in the future)
Demonstrate	Support your ideas with evidence and examples	Present	Show work for display or observation to an audience
Describe	Give a detailed picture (in words) of a situation, event, pattern or process	Prove	Demonstrate by evidence or argument the truth or existence of; use logical steps to obtain a result in a formal way
Design	Create a plan, model or simulation	Recall	Remember from past learning experiences
Determine	Figure out the best possible answer	Reflect	Think deeply or carefully about; to consider
Discuss	Consider all arguments, ideas, and opinions about a given topic and support with evidence	Recognize	Identify through patterns or features
Distinguish	Make clear how two (or more) items or concepts are different	Show	Give the steps in a calculation or process

Document	Something that can be used to provide evidence or information. Credit sources of information used in research by referencing or citing internally and in a Works Cited page, using MLA format	Sketch	Represent a general idea by means of a diagram or graph (appropriately labeled) or brief written account
Estimate	Approximate the amount before you know the exact number or answer	Solve	Find an answer to, explanation for, or way of dealing with (a problem or situation)
Evaluate	Examine and make judgments carefully about ideas, works, solutions or methods	State	Give a specific answer
Examine	Explore, observe or study an idea or concept in depth	Suggest	Propose an answer, hypothesis or other possibility
Exemplify	Show or illustrate by example	Summarize	Create a brief description including the general theme and major point(s) of something
Explain	Use details to describe	Synthesize	Combine different ideas in order to create something new