

Grade 8				
Ch. 9 Lesson 4				
Earth and Space Science				
Page #	Question	Answer(s)	Links/Sources	Student Resources
354	If we breathe in pollution, how can this harm our lungs?	*Polluted air may contain many things, including dust, mold, spores, pollen, car exhaust toxins, ozone, lead, bacteria, and viruses. When pollutants and bacteria in the air enter the body, the respiratory system's functions may become impaired.		
354	How can you protect yourself from air pollution?	*Sample answer: Wear a face mask, stay away from polluted areas, don't exercise outside when pollution is high.		
354	What is the AQI today in your community?	*Answers will vary. Talk about what the index tells students about the air. Note: The current local AQI for areas in the U.S. can be quickly found by looking at an internet based weather service that provides local information. One of the fastest sources is AirNow - https://www.airnow.gov/	https://www.airnow.gov/?city=Acampo&state=CA&country=USA	
354	What other health problems do you know about that are result of air pollution?	Sample answer: Lung cancer, emphysema, asthma, COPD, pneumonia.		
354	How do you think scientists measure levels of pollutants in the air?	Sample answer: By specially designed portable instruments that draw in samples of the air, analyze it, and display the results.		
354	What pollutants do they look for?	Sample answer: Carbon monoxide, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide.		
354	Have you ever heard a weather report that included information about air quality?	Sample answer: Yes.		
354	Can you recall a day when the air quality was poor?	Answers will vary. Poor AQI readings are usually found in cities during very hot temperatures and in winter when there are temperature inversions.		
354	If so, how did it make you feel?	Sample answer: I didn't really feel the effects, because I stayed indoors most of the day.		
355	How might breathing smog affect your health?	*Sample answer: It may cause respiratory problems.		

355	How does this passage relate to air-quality issues today?	After students have read the Scripture passage, instruct them to create a Venn diagram to compare and contrast what man had to do before sin entered the world and after sin entered. Explain that it is our responsibility and God's expectation that we care for our home on Earth, which includes not polluting the air.		
355	What types of particles make up air pollution?	Sample answer: Carbon monoxide, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide.		
355	Which have natural origins?	Sample answer: Ozone (caused by lightning), sulfur dioxide (caused by volcanoes).		
355	Is human-made air pollution more harmful than natural air pollution?	Sample answer: No, air pollution, is air pollution. The difference is that human activity produces much greater amounts of some air pollutants.		
355	What do you think caused the smog in this city?	Sample answer: Atmospheric conditions that prevent air pollutants from escaping into the upper atmosphere.		
355	How would you feel if you had to breathe this air?	Sample answer: My eyes would sting and water, my lungs would be irritated and I might start coughing and wheezing.		
355	Why might some of the sunniest cities be some of the most polluted?	Sample answer: Because these cities have many motor vehicles that produce exhaust that reacts with other chemicals in the air with the help of sunlight.		
355	How do you think your daily life would change if you lived where the average temperature was much colder?	Sample answer: I would go outside less, I would wear warmer clothes, my asthma could be worse. On the positive side I would be able to enjoy winter sports more.		
356	What is trapping infrared radiation in our atmosphere	*Greenhouse gases.		
356	What does air pollution look like?	*Sample answer: The particles in this investigation are tiny black specks, but in the air pollutants vary and can even be invisible.		
356	What is global warming?	*An increase in Earth's surface temperature.		
356	How does deforestation contribute to global warming?	*Sample answer: When large tracts of forests are cut down, rates of photosynthesis decrease and more carbon dioxide remains in the atmosphere, contributing to global warming.		
356	How might global warming affect hurricanes?	*Sample answer: Global warming can cause an increase in ocean temperatures. Hurricanes get their energy from warm ocean water. If ocean temperatures increased, the intensity and frequency of hurricanes might increase too.		

356	What events do you think caused these changes?	Sample answer: Sudden and extensive periods of volcanic eruptions that dumped large amounts of ash into the atmosphere, blocking out sunlight which caused temperatures to drop dramatically causing colder temperature and large amounts of snowfall.		
356	How might this increase in water vapor and energy in the atmosphere affect the frequency of severe storms?	Sample answer: I think these conditions will cause a greater frequency of severe storms.		
356	How might an increase in global temperatures affect species on Earth as whole and in specific regions of Earth?	Sample answer: Species that cannot adapt quick enough will become extinct. In certain regions, animals may move in or move out depending on whether or not the local temperature suit them.		
356	What are some greenhouse gases?	Sample answer: Carbon dioxide and methane.		
356	How do greenhouse gases raise temperatures on in our atmosphere?	Sample answer: They act as a blanket keeping reflected heat waves from escaping into the upper atmosphere.		
356	Which source gave off the most pollution?	Answers will vary depending on the samples investigated.		
356	Why do you think this example gave off the most pollution?	Sample answer: Because it gave off the most visible smoke.		
356	Why should pollution be a concern for all of us.	Sample answer: Because we all breathe the air. If the air is polluted, we all are affected.		
357	Which box will have the highest temperature in this experiment?	Sample answer: I think the box with the acrylic sheet over it and placed in the sunlight.		
357	How would a volcanic eruption affect temperature?	Sample answer: It would lower the temperature.		
358	What will be the increase in global temperatures between 2010 and 2050	*Answers will vary. Students should realize that it is unlikely that we would drop back to the 1880 level because of our advanced technology.		
358	Give and example of one way you can help reduce air pollution that is not mentioned in the text.	*Sample answer: Buy products that are made by companies that use alternative energy sources to produce their goods; purchase goods that are grown or produced locally.		
359	What other international efforts have countries worked on to protect the planet?	Sample answer: Global climate agreements, the Paris Agreement, the Convention on Biological Diversity as well as others. Note: There are over 3500 international environmental agreements.	https://www.cbd.int/brc/ https://iea.uoregon.edu/	

359	Find out about recent developments under the Protocol that have been proposed by the United States, Canada, and Mexico.	*Provide students with current information or direct them to the Protocol website. They can share the main points they discover.	https://www.unep.org/ozonaction/who-we-are/about-montreal-protocol https://www.epa.gov/ozone-layer-protection/recent-international-developments-under-montreal-protocol#:~:text=On%20October%2015%2C%202016%2C%20with,over%20the%20next%2030%20years.	
360	What do you think the president saw that influenced him?	*Sample answer: He probably saw the wildlife and experienced how relaxing it was to be away from the rest of the worries of the world.		
361	Why is it so important to consider natural areas and wildlife at the start of land planning?	*Planners have the opportunity to create ways to conserve vulnerable habitats while planning for future development.		
361	Describe one of the basic principles that land planners use to focus on the area's natural resources.	*Answers will vary but should cover one of the following: Natural features are part of the community's character providing ecosystem services, including water purification, contributing to the area's quality of life; planning ahead protects natural resources better than reactive response; planning reduces conflict by raising awareness of environmental concerns; natural resources do not always follow community boundaries.		
* Means the answer is found in the TE.				