



# High School Science Virtual Learning

## Biology Ecosystems

May 19, 2020



# **High School Applied Biological Science**

## **Lesson: Human Impact on Ecosystems Air and Water Pollution**

### **Objective/Learning Target:**

Students will understand the effect of human influences on air and water pollution.

## Bell Ringer Activity

1. What type of human impact is happening in this picture?



2. What type of human impact is happening in this picture?



## Bell Ringer Answers

1. Crude oil drilling where we extract oil from the earth by drilling wells in underground reservoirs.
2. This is air pollution where we release large/harmful quantities of things such as gas, particulates, and biological molecules into the atmosphere of the earth.

# Let's Get Started!

## Lesson Activity:

### Directions:

1. Read the articles on water and air pollution.
2. Take notes on how humans have impacted water and air quality.

Links: [article #1](#), [article #2](#),  
[article #3](#)



## Practice Questions

1. What is a “dead zone,” and what is its cause?
2. Why is watershed management important to maintaining good water quality in a large river or lake?
3. What causes acid rain?
4. What two environmental effects are mainly associated with the burning of fossil fuels?
5. The human population (about 7.8 billion) may reach 9 billion by 2100. Most of those people will live in cities. Predict the impact of city growth on natural ecosystems and farmland. What will happen if sustainable development is not achieved?

## Answers to Practice Questions

1. A dead zone is an area of freshwater or seawater that is oxygen-poor. Dead zones are caused by excess amounts of nitrogen and phosphorus that is found in raw sewage. These nutrients cause blooms of algae and bacteria that use up the oxygen.
2. A watershed is all the land whose groundwater and streams drain into a larger body of water. Reducing pollutants in the watershed will help reduce pollution in the large body of water.
3. Acid rain is caused by nutrient pollution in the air. Nitric and sulfuric acids found in acid rain kills plants and harms the soil.

## Answers to Practice Questions Continued

4. Two environmental effects associated with the burning of fossil fuels are acid rain and ozone depletion.
5. Increasing amounts of land will be needed to produce enough food. And increasing amounts of resources will be needed to transport goods to cities. Without sustainable development, air and water pollution will increase.





## Common Misconceptions

- “Air pollution is present only if you can see it.”- not true. Many chemical pollutants in the form of gases, vapors and particles are invisible but still can trigger reactions like allergies and may cause respiratory health effects.
- “The air quality is always better indoors vs. outdoors” - The opposite can be the case when you consider the concentration levels of pollutants in an enclosed space. The Environmental Protection Agency (EPA) reports that in some places the air quality inside could be 2-5x worse than outside, based on their studies assessing indoor concentrations of airborne chemicals.
- “Air pollution and water pollution only affect a limited area.”- not true. Precipitation can carry air and land pollutants to other areas including our water sources.

## More Practice

Follow the links below to do more practice.

[Quizizz - Air, Land, & Water Pollution](#)

[Pollution Quiz](#)





## Additional Resources

[Air Pollution 101 | National Geographic](#)

[Sustainable development | Ecology & Environment](#)

[Renewable Energy 101 | National Geographic](#)