


Module 11: Meteorology

Topic 7 Content: Human Influenced Climate Change Notes

Introduction

Human Influenced Climate Change

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The burning of fossil fuels is the largest source of air pollution. There are several different pollutants, known as primary pollutants that cause a variety of environmental risks. Some of these pollutants can mix with other pollutants or other gases in the atmosphere to form secondary pollutants. In this interactivity, click the buttons or use the arrows in the lower right corner to investigate examples of primary and secondary pollution.

Primary Pollution Secondary Pollution

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Carbon Monoxide

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Carbon Monoxide

Carbon monoxide is an odorless, colorless, poisonous gas. This gas enters the atmosphere during incomplete combustion. Most of the carbon dioxide entering the atmosphere enters from automobiles that burn fossil fuels.



Carbon Monoxide

Primary Pollution Secondary Pollution

The diagram shows a horizontal arrow pointing to the right, divided into two sections. The left section is dark grey and labeled 'Primary Pollution' with five small white circles. The right section is orange and labeled 'Secondary Pollution' with two small white circles. A callout box labeled 'Carbon Monoxide' points to the first circle in the Primary Pollution section.

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Nitrogen Oxides

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Nitrogen Oxides

Nitrogen oxides are emitted by both automobiles and industry.



Nitrogen Oxides

Primary Pollution

Secondary Pollution

The diagram features a horizontal arrow pointing to the right. The left portion of the arrow is dark grey and contains five small white circles. The right portion is orange and contains two small white circles. A callout box labeled 'Nitrogen Oxides' points to the first circle in the grey section. Below the arrow, the text 'Primary Pollution' is aligned with the grey section, and 'Secondary Pollution' is aligned with the orange section.

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Volatile Organic Compounds

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Volatile Organic Compounds

Volatile organic compounds, or VOCs, are highly reactive organic compounds containing hydrogen and carbon. The main source of the compounds is automobiles. Combustion releases the compounds. Evaporation of gasoline while fueling also releases volatile organic compounds into atmosphere. VOCs are also released when oil-based paints or cleaning solvents are used.



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Sulfur Dioxide

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Sulfur Dioxide

Sulfur dioxide is mostly released during the burning of coal.



Sulfur Dioxide

Primary Pollution Secondary Pollution

The diagram shows a horizontal arrow with five circular markers. The first four markers are in a grey section labeled 'Primary Pollution', and the fifth marker is in an orange section labeled 'Secondary Pollution'. A callout box labeled 'Sulfur Dioxide' points to the fourth marker.

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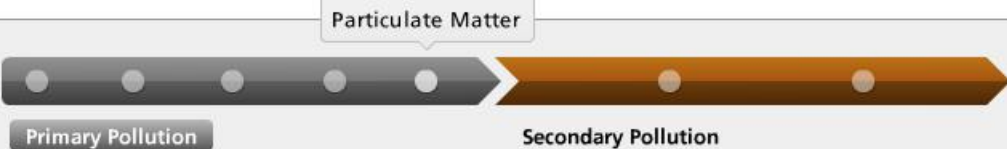

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Particulate Matter

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Particulate Matter

Particulate matter includes dust, salt, and ash particles. This matter can enter the atmosphere from a variety of sources.



Particulate Matter

Primary Pollution

Secondary Pollution

Particulate matter includes dust, salt, and ash particles. This matter can enter the atmosphere from a variety of sources.

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Smog

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Smog

Smog is a type of air pollution that commonly forms in large industrial cities that have heavy car traffic. Smog forms when sunlight reacts with nitrogen oxides and volatile organic compounds in the atmosphere. Smog is harmful to humans and causes a variety of respiratory problems. Places such as Los Angeles, Hong Kong, Beijing, and Mexico City have been seriously impacted by smog pollution. Smog advisories recommend against being outside on days with particularly poor air quality. Smog gives the air a brownish coloration.



The diagram illustrates the relationship between primary and secondary pollution. It features a horizontal arrow that transitions from dark grey to brown. The dark grey section is labeled 'Primary Pollution' and contains five dots. The brown section is labeled 'Secondary Pollution' and contains two dots. A callout box labeled 'Smog' points to the first dot in the 'Secondary Pollution' section, indicating that smog is a form of secondary pollution.

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Acid Precipitation

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Acid Precipitation

While rain is naturally a little acidic, nitrogen oxides and sulfur dioxide pollutants increase the acidity of precipitation in affected areas. Car exhaust and the burning of coal are two of the major sources of the pollutants that cause acid precipitation. Acid precipitation affects plant life, animals, entire bodies of water, soil for growing crops, and personal property such as buildings and cars. The image shows a tree that was exposed to acid rain.



Acid Precipitation

Primary Pollution Secondary Pollution

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