

Physical Science 107

Lesson Two: Ground Level Air Pollution

Reference: Essential Environment 2nd Edition by Withgott and Brennan, Chapter 12

Vocabulary

temperature inversion

Hadley cells

primary pollutants

secondary pollutants

Clean Air Act

criteria pollutants

particulate matter

volatile organic compounds (VOCs)

fossil fuel

industrial smog

photochemical smog

acid rain

pH

air quality index (AQI)

carbon monoxide CO

sulfur dioxide SO₂

nitrogen dioxide NO₂

tropospheric ozone O₃

lead Pb

What is wind?

Review of air pressure, Hadley cells

Air Pressure Demonstrations

Soda can with hot water vapor, suspended ball,

What types of pollutants exist in our atmosphere?

Chemical properties of sulfur and nitrogen, oxidation reactions, properties of carbon monoxide

Demonstration

Prepare nitrogen dioxide to observe reddish color and acidic properties, discussion of pH and its measurement

How are pollutants measured?

ppm and ppmv units

Particles in the atmosphere: Why is the sky blue?, Tyndall effect.

Demonstration

Scattering of light, Tyndall effect

Environmental Protection Agency (EPA)

Clean Air Act

Pollution in other countries

Air Quality Index