



# AIR POLLUTION

## SELF-ASSESSMENT TEST

### LESSON 1

#### Answers

**1. False**

The residence time is the time it takes for **50%** of the quantity of a pollutant to disappear in its various sinks. This time depends on the atmospheric pollutant sources and sinks as well as its reactivity.

**2. True**

Unlike **anthropogenic sources**, natural sources of air pollution can be predicted and assessed but cannot complexly prevented or controlled. Natural sources include volcanoes, seismic activities, geothermal activities, wild-land fires, high-wind events, sea sprays and the atmospheric re-suspension or transport of natural particles from dry regions.

**3. False**

Greenhouse gases absorb and reemit **infrared radiation**, whereas they are transparent **to most of the solar radiation**. They are so called because their presence limits the heat escaping into space, much like the glass of a greenhouse, thus building up the temperature of the atmosphere.

**4. True**

Assuming that it behaves as an ideal gas, at 25° C and 1 atmosphere, 5 parts per million of carbon monoxide equal  $5714 \mu\text{g}\cdot\text{m}^{-3}$

**5. True**

Oxidation is the prime chemical removal mechanism for inorganic and organic gases as the bulk of dry air is made up of nitrogen (78% by volume) and **oxygen** (21% by volume).

**6. True**

Precursors can be primary pollutants or natural constituents of the atmosphere **such as water vapor or solar radiation**. Nitric oxide (NO) is a



precursor molecule to nitrogen dioxide (NO<sub>2</sub>); NO<sub>2</sub> absorbs sunlight and initiates atmospheric photochemical reactions.

**7. False**

**Stratospheric ozone** absorbs most of the biologically damaging UV sunlight. In contrast, the tropospheric or the ground-level ozone is an air pollutant that damages human health, vegetation, and many common materials. It is a key ingredient of urban smog.

**8. False**

Acid rain is a **regional-continental** air pollution problem caused by emissions of sulfur dioxide and nitrogen oxide.

**9. True**

Atmospheric pressure decreases exponentially with increasing altitude, from an average of 1013 mb at the Earth's surface to 140 mb at 14 km.

**10. False**

**Stratosphere** is of interest to aerospace engineers because it is traversed by commercial airplanes, whereas thermosphere is of interest to space scientist because it must be traversed by space vehicles en route to or from the moon or the planets.