



Biology 101

Air & Breathing

Remember to practice with the study questions on the BIOL 101 web site.

Acid precipitation	Oxides
Alveolus (-i)	NO _x
CFCs	Particulates
CH ₄	pH
CO	Photochemical smog
CO ₂	Respiratory disease
Diffusion	Smog
Emissions	SO ₂
Global warming	Stratosphere
Hydrocarbons	Temperature inversion
Mucociliary escalator	Troposphere
O ₂	UV radiation
O ₃	

1. Which of the above terms are on the Smog Check Vehicle Inspection Report (check at a gas station)?
2. Read about pH in *Biology* on p. 40.
 - a. The pH scale goes from _____ to _____.
 - b. Acids are pH _____ to _____.
 - c. Bases are pH _____ to _____.
 - d. A pH of 5 is _____ times more acidic than a pH of 6; a pH of 4 is _____ times more acidic than a pH of 6.
3. “The Fog” is a medical detective essay by Berton Roueché available on the BIOL 101 web site. Read the essay and be able to answer the following questions:
 - a. Was the diagnosis verified? How many cases were reported? How was the diagnosis verified?
 - b. Was the outbreak considered an epidemic? Why?
 - c. Describe the outbreak by Time, Place, and Person Factors. Describe the population at risk by age, sex, occupation, exposure to specific foods, ethnicity, and where the outbreak occurred.
 - d. How many possible sources were considered (hypotheses tested)? Who was at highest risk of acquiring the disease?
 - e. Did you find the investigation interesting? Were you surprised by the findings?
 - f. What was special about the fog in Donora this time? Why hadn't this happened before?
4. Look in the Weather section of the daily newspaper for the Air Quality Index. What is the cleanest place in the Bay Area? _____ The smoggiest? _____ Date _____
5. Diagram the carbon cycle. In doing so, explain how carbon enters the living system and how it leaves, indicate the role of microorganisms in the cycle, and identify the reservoir for carbon. In the context of global warming, describe how humans are affecting the carbon cycle.?

A Global Warming Problem

Plant species	Annual precipitation (cm)	Notes	Bird species	Place (latitude)
Snow covered	130	Rock outcrops, no soil	Gray crowned rosy finch	Mt. Shasta
Whitebark pine	140	Forisol	Snow bunting	
Western white pine	130	Forisol	Pine siskin	Trinity Co.
Pigmy cypress	120	Acid, water-logged soil	Scrub jay	Mendocino
Redwood	110	Coastal fog	Scrub jay	Marin Co.
Chaparral	100	Serpentine soil, no streams	Scrub jay	San Mateo Co.
Cottonwood, sycamore	90	Streams	Orioles	Santa Clara Co.

If the Earth's temperature rose 0.5°C per year and the rainfall decreased 1 cm per year, predict the changes for the species listed after 10 years.

Plant species	Stay; move north/south; extinct	Bird species	Stay; move north/south; extinct
Whitebark pine		Gray crowned rosy finch	
Western white pine		Snow bunting	
Pigmy cypress		Pine siskin	
Redwood		Scrub jay	
Chaparral		Scrub jay	
Cottonwood, sycamore		Scrub jay	
		Orioles	