

Environmental chemistry

1 Choose from these pH values to answer the questions below.

pH 2

pH 4

pH 6

pH 7

pH 8

- a What is the pH of neutral water? pH 7
- b A good growing soil is very slightly acidic. What is its pH? pH 6
- c What may be the pH of an alkaline limestone soil? pH 8
- d Which could be the pH value of naturally acidic rainwater? pH 6

2 Rearrange the letters to make the name we give to naturally occurring water that contains pollutants such as sulphur dioxide.

RADII CAN ACID RAIN

3 Look at the list of gases. Underline two which cause air pollution.

argon hydrogen oxygen
carbon dioxide nitrogen sulphur dioxide

4 Underline two gases in this list that cause acid rain:

argon nitrogen oxygen
hydrogen nitrogen oxide sulphur dioxide
methane

5 Rearrange these letters to make the word we use to describe what scientists are doing when they keep measuring pollution levels.

IN MOTOR MONITOR

6 Complete the following word equations.

carbon + oxygen → carbon dioxide

sulphur + oxygen → sulphur dioxide

acid + carbonate → salt + carbon dioxide + water

acid + metal → salt + hydrogen

7 For each of these statements about acid rain, write **true** or **false**.

a Gases responsible for acid rain are produced in car engines. true

b Sulphur dioxide is released every time a volcano erupts. true

- c** There are no natural sources of the sulphur dioxide in the atmosphere. false
- d** Sulphur dioxide is removed from waste gases by treatment with an acid. false
- e** Sulphur dioxide from power stations is the major source of sulphur dioxide in the atmosphere. true
- f** In lakes, problems caused by acid rain are solved by adding a metal. false
- g** Acid rain has a pH between 2 and 5. true
- h** Acid rain can cause damage to rocks, metals and living things. true
- i** Nitrogen oxides cause acid rain. true
- j** Catalytic converters can't reduce acid rain. false
- 8** Here is a list of statements about the greenhouse effect. They are in the wrong order. Write the letters to show the correct order of the statements. The first letter has been written for you.
- A** The increased greenhouse effect is making the Earth warmer.
- B** This is called the greenhouse effect.
- C** Energy from the Sun heats up the Earth.
- D** The Earth gives out energy as heat.
- E** Heat energy is reflected back by greenhouse gases in the atmosphere.

The correct order is: **C** D E B A

- 9** Complete the following sentences. Use the words below to fill the gaps. You may use each word once, more than once, or not at all.

starve

crops

fall

flooding

melt

rise

- a** Global warming could cause the sea temperatures to rise.
- b** The rising temperature will cause the icecaps to melt.
- c** More water in the oceans will cause the sea level to rise and will result in flooding.
- d** The climate will change so that farmers might have to grow different crops or people may starve.