AP ENVIRONMENTAL SCIENCE • EXERCISE SHEET

7.4 Atmospheric CO2 and Particulates

Name: _____ Class: _____ Date: _____ **Total: 10 marks**

Objective

Build the skills to answer exam questions on **atmospheric CO and particulates**.

You must be able to:

- explain rising **CO_2** and its climate link
- describe **particulate matter (PM)** 颗粒物 and its health effects
- distinguish their different impacts

1 Worked examples

Study these first. Each one shows the method for a question type used later —follow the steps and you can do the Practice and Exam-style questions yourself.

Rising CO

Burning fossil fuels raises atmospheric **CO_2**, a **greenhouse gas** that traps heat and drives climate change. CO_2 is not directly toxic to breathe at these levels but is a major climate concern.

Particulate matter

Particulate matter (PM) is tiny solid/liquid particles (soot, dust). **PM2.5** (very fine) is most dangerous —it lodges deep in the lungs, causing respiratory and heart disease.

Different impacts

- **CO_2** → mainly a **climate** problem (global).
- **PM** → mainly a **health** problem (local air quality).

A worked distinction

A diesel truck emits both CO_2 (adding to climate change) and PM (harming the lungs of nearby people) —two different kinds of impact.

2 Practice

Now apply the methods above.

2.1 Why is rising CO_2 a concern? [1]

2.2 What is particulate matter? [1]

2.3 Which is mainly a health problem: CO_2 or PM? [1]

3 Exam-style questions

3.1 The most dangerous particulate matter for health is [1]

- **A** large dust only
- **B** fine PM2.5 that lodges deep in the lungs
- **C** carbon dioxide
- **D** oxygen

3.2 A city has high levels of both CO_2 and PM2.5.

(a) State the main impact of each. [2]

(b) Explain why PM2.5 is especially harmful to health. [2]

3.3 Explain why CO_2 is described as a global problem while PM is more local. [2]

4 Go further

You are now ready for the real exam questions on this subtopic:

- work through the **7.4 Atmospheric CO2 and Particulates** lesson on the **Learn** page;
- read the **Atmospheric CO2 and Particulates** section of the AP Environmental Science handout on the **Know** page.

Solutions

2.1 It is a greenhouse gas that traps heat and drives climate change.

2.2 Tiny solid or liquid particles (soot, dust) in the air.

2.3 PM.

3.1 B —fine PM2.5 that lodges deep in the lungs.

3.2 (a) CO_2 → climate change; PM2.5 → respiratory/heart disease. (b) It is fine enough to lodge deep in the lungs and enter the bloodstream, causing serious respiratory and heart problems.

3.3 CO_2 mixes throughout the atmosphere and warms the whole planet (global), while PM settles out near its source, so its worst effects are on local air quality.