AP ENVIRONMENTAL SCIENCE • EXERCISE SHEET

5.9 Impacts of Mining

Name: _____ Class: _____ Date: _____ **Total: 9 marks**

Objective

Build the skills to answer exam questions on **impacts of mining**.

You must be able to:

- compare **surface** 露天开采 and **subsurface** 地下开采 mining
- describe impacts (habitat loss, **acid mine drainage** 酸性矿山废水, tailings)
- suggest reclamation

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.

Two mining types

- **Surface mining** (open-pit, strip, mountaintop removal) —removes overlying rock/soil; cheap but destroys large areas of habitat.
- **Subsurface mining** —tunnels underground; less surface damage but more dangerous for workers.

Impacts

- **Habitat destruction** and soil removal.
- **Acid mine drainage** —water reacting with exposed sulfide rock becomes acidic and toxic, polluting streams.
- **Tailings** —leftover waste that can leach toxic metals.

Reclamation

Reclamation restores mined land —replacing soil, replanting vegetation, and treating polluted water —to recover some ecosystem function.

A worked link

Rain washing through exposed sulfide-rich rock produces acid mine drainage that lowers stream pH and kills aquatic life downstream.

2 Practice

Now apply the methods above.

2.1 State one difference between surface and subsurface mining. [1]

2.2 What is acid mine drainage? [1]

2.3 What is reclamation? [1]

3 Exam-style questions

3.1 Acid mine drainage harms streams by [1]

- **A** raising their pH
- **B** lowering their pH and adding toxic metals
- **C** adding oxygen
- **D** cooling the water

3.2 A company strip-mines a forested hillside.

(a) State two environmental impacts. [2]

(b) Suggest one way to restore the land afterward. [1]

3.3 Explain how acid mine drainage forms and why it harms aquatic life. [2]

4 Go further

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

- work through the **5.9 Impacts of Mining** lesson on the **Learn** page;
- read the **Impacts of Mining** section of the AP Environmental Science handout on the **Know** page.

Solutions

2.1 Surface mining removes overlying rock/soil (more habitat damage); subsurface mining tunnels underground (less surface damage).

2.2 Acidic, metal-laden water from mines that pollutes streams.

2.3 Restoring mined land (soil, vegetation, water treatment).

3.1 B —lowering their pH and adding toxic metals.

3.2 (a) Any two: habitat destruction, soil loss, acid mine drainage, tailings pollution. (b) Reclamation —replace soil and replant vegetation.

3.3 Water reacts with exposed sulfide minerals to form acid; this acidic, metal-rich water lowers stream pH, which is toxic to fish and other aquatic organisms.