

Exercise walk-through

9.3

The Greenhouse Effect

AP Environmental Science

The greenhouse effect

A *natural* warming: sunlight warms the ground, which radiates **infrared radiation** ; **greenhouse gases** trap some heat.

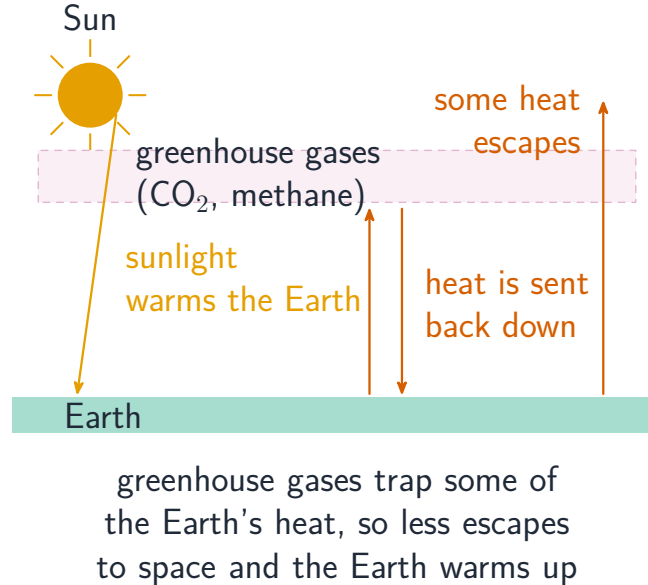
- CO₂, methane , water vapor

Keeps Earth **habitable** :
+15°C, not -18°C. The problem
is making it **too** strong.



Endangered coral

Greenhouse gases absorb the heat the Earth



Greenhouse gases absorb the heat the Earth gives off and send some back

Exercises 2.1-2.3

2.1 What type of radiation do greenhouse gases absorb?

[1]

2.2 Name two greenhouse gases.

[2]

2.3 Why is the natural greenhouse effect important?

[1]

Exercises 2.1-2.3

2.1 What type of radiation do greenhouse gases absorb? [1]

2.1

- Infrared (heat) radiation
-

2.2 Name two greenhouse gases. [2]

2.2

- Any two: CO₂, methane, nitrous oxide, water vapor, CFCs
-

2.3 Why is the natural greenhouse effect important? [1]

2.3

- It keeps Earth warm enough for life

Exercise 3.1

3.1 Greenhouse gases warm the Earth by absorbing and re-emitting

[1]

☐

A visible light

B infrared (heat) radiation

C ultraviolet only

D sound

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[1]

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A visible light

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3.1 B

- infrared (heat) radiation

Exercise 3.2 (a)

3.2 Human activity is strengthening the greenhouse effect.

(a) Explain the difference between the natural and enhanced greenhouse effect. [2]

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(a)

- The natural effect keeps Earth livably warm; the enhanced effect is the extra warming from human-added greenhouse gases

Exercise 3.2 (b)

3.2 Human activity is strengthening the greenhouse effect.

(b) State the main gas responsible and its main source.

[2]

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3.2 Human activity is strengthening the greenhouse effect.

(b) State the main gas responsible and its main source.

[2]

(b)

- CO₂, mainly from burning fossil fuels

Exercise 3.3

3.3 Explain why the natural greenhouse effect is necessary for life on Earth.

[2]

Exercise 3.3

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3.3

- Without greenhouse gases trapping heat, Earth's average temperature would be well below freezing, too cold for most life