Name: .....

Date: .....

Class: .....

IGCSE BIOLOGY EDEXCEL 9-1

CHAPTER WORKBOOK

Human Influences on the Environment

Air Pollution – Sulphur Dioxide and Carbon Monoxide

1. Define *pollution*.

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2. State one natural and one human source of sulphur dioxide in the atmosphere:

A Natural source:

.....

A Human source:

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3. Draw a flow diagram to summarise the formation of acid rain from sulphur dioxide.

4. In the boxes below explain four biological impacts of acid rain. You can write a response or used labeled diagrams.

	Effects on aquatic organisms	**Effects on plants**
Acidic water/soil		
Aluminium ions		
Leached minerals		

5. Lichen is an indicator species for air pollution.

a) Explain what is meant by the term "indicator species".

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b) With reference to lichens A and B in the image below, outline how lichens can be used as an indicator for sulphur dioxide levels.

Photo credit: pixabay.com

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6. Carbon monoxide (CO) is a potentially harmful gas.

a) Outline how cars can release carbon monoxide.

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b) Explain the danger carbon monoxide poses to humans.

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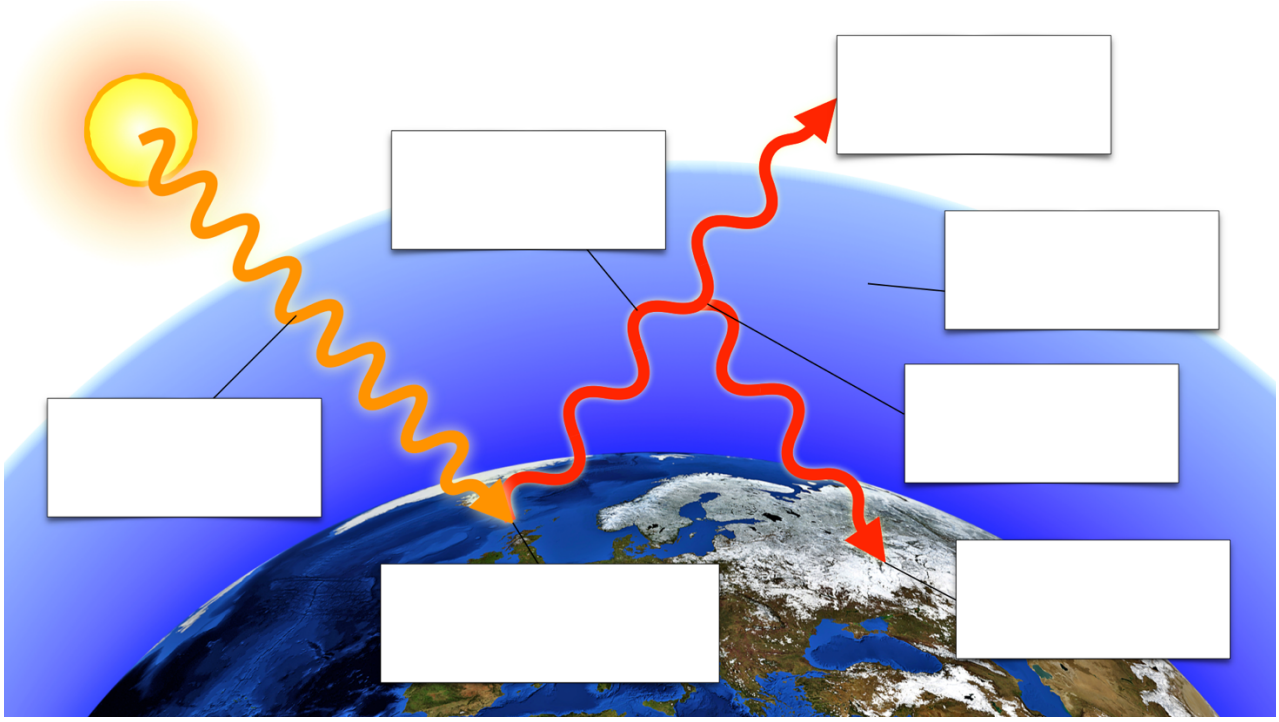
The Greenhouse Effect and Climate Change

1.

a) Add labels to the diagram to summarise the greenhouse effect. Use the phrases in the box.

Longwave radiation	Shortwave radiation
Some heat radiated to Space	Atmosphere containing greenhouse gases
Absorption and re-emission by Earth	Trapped heat warms the Earth
Absorption and re-emission by greenhouse gases	



b) Fill in the missing letters to name the greenhouse gases.

i) C_ _ _ _ _ n D _ _ _ _ _ _

ii) M _ _ _ _ _ e

iii) W _ _ _ r V _ _ _ _ _ _

iv) N _ _ _ _ _ s O _ _ _ _ _

v) Some _ _ _ s (Some chloroflourocarbons)

2. Explain the ways humans are enhancing the greenhouse effect. Use the headings to help you.

Cars, factories and energy generation

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Cattle farming

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3. Compare the *greenhouse effect* with *global warming*.

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4. Outline the term *climate change*.

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5. In the table below summarise the possible changes that may occur as a result of increased greenhouse gas levels. For each one, suggest an impact this may have on living organisms.

	Changes	**Impacts on living organisms**
Ice and sea levels	.....	.....
Ocean currents	.....	.....
Global temperatures	.....	.....
Rainfall patterns	.....	.....

Water Pollution - Eutrophication

1.

a) Fill in the letters to list four things that plants need to survive.

i) S _ _ _ _ _ _ t

ii) W _ _ _ r

iii) C_ _ _ _ _ n D _ _ _ _ _ _ e

iv) M _ _ _ _ _ _ s

b)

i) Which one of the above is usually found in short supply in a natural environment?

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ii) What do farmers add to their fields to account for this short supply?

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2. Outline how fertilisers may enter water systems such as rivers, lakes and oceans.

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2. Complete the sentences about eutrophication using the words below:

aerobic	decrease	oxygen	
biodiversity	algae	nourished	
microorganisms	die	light	fish

Eutrophication, which literally means well-……, begins when fertilisers enter water. This encourages the growth of plants as well as ……, which can grow on the surface of the water. This reduces the amount of …… which can reach the plants below so they …… due to lack of light. Dead plants and algae provide lots of organic matter for …… to decompose. These decomposers use …… respiration, meaning they respire using …… . Over time, the oxygen levels …… . Without enough oxygen, …… and other organisms can't survive in the water. Ultimately, eutrophication results in the death of organisms and a reduction in …… .

3. Define *eutrophication*.

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Water Pollution - Sewage

1. Outline the term *sewage*.

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2. Sewage that enters water systems such as rivers can be problematic. Explain why this is in terms of the following:

Depleted oxygen

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Disease

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3. Outline how indicator species can be used to determine the level of pollution due to sewage.

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Triple Award

Deforestation

1. Deforestation is the clearing of a wide area of trees.

Explain why large areas of forest are cleared. Use the headings to help you.

Timber

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Agriculture

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2. Explain how "slash and burn" forest clearing can affect the carbon cycle.

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3. Explain how deforestation can affect the water cycle.

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4. In the table below summarise the negative impacts of deforestation.

Habitats	…… …… ……
Soil minerals	…… …… ……
Soil erosion	…… …… ……
Flooding	…… …… ……
Climate change	…… …… ……
Lost natural resources	…… …… ……