

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Class: \_\_\_\_\_

---

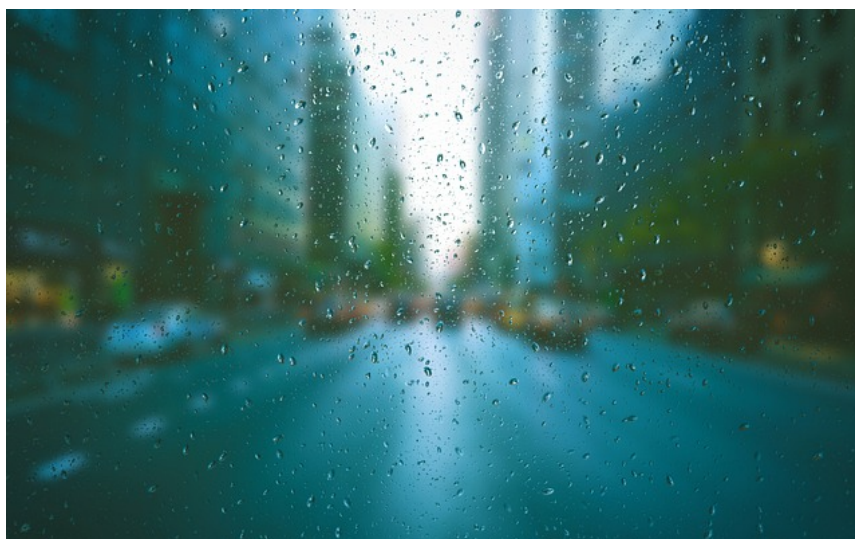
**IB ESS**

# 6.4 Acid Deposition

## **Significant ideas:**

Acid deposition can impact living systems and the built environment.

The pollution management of acid deposition often involves cross-border issues.



## What is Acid Deposition?

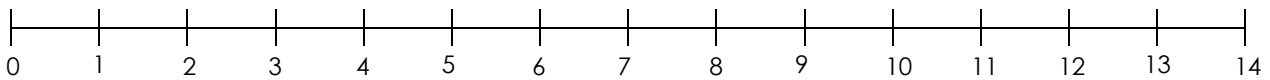
*It's more common to talk about "acid rain" than acid deposition, but "rain" is only one way in which the acid may be deposited. Make sure you are using appropriate vocabulary and don't mix up the phrases.*

1. a) Complete the pH scale below with the labels:

*Neutral, more acidic, more alkaline*

b) On the scale, label the following:

- i) the range in which fish reproduction is negatively affected
- ii) the range in which adult fish die
- iii) The "normal" pH of rainwater
- iv) The "normal" range of pH of stream water



2. Outline the **natural** release of **primary pollutants** that can result in acid deposition.

---

---

3. Outline how human activities result in the release of **primary pollutants** that can result in acid deposition.

---

---



4. List **three secondary pollutants** of both dry and wet acid deposition.

---

---

---

5. Distinguish between "wet deposition" and "dry deposition".

---

---

---

6. Draw a diagram summarizing acid deposition.

In your diagram you should include the release of *named* primary pollutants, their conversion into *named* secondary pollutants, and their methods of deposition.



## Impacts of Acid Deposition

1. With the help of examples and with reference to acid deposition, distinguish between the terms "direct effect" and "indirect effect".

---

---

---

---

2. Explain the effects acid deposition on coniferous forest. Use the subheadings to guide your answer.

*Leaf and bud yellowing:*

---

---

*Reduced growth:*

---

---

*Nutrient leaching:*

---

---

*Symbiotic root microbes:*

---

---

*Toxic ions:*

---

---



3. Complete the sentences to outline the effect of acid deposition on aquatic organisms

An increase in soil acidity (a \_\_\_\_\_ in pH), results in leaching of aluminium (and other toxic metals) as it dissolves more easily in acidic conditions. When aluminium is present in water, it changes the amount of \_\_\_\_\_ and \_\_\_\_\_ that a fish can take in. Fish take in \_\_\_\_\_ for respiration from water so a change in water intake influences \_\_\_\_\_ intake. The changes in levels of salt, water and oxygen in the body can result in the death of fish (and other aquatic organisms). If Aluminium is present in \_\_\_\_\_ concentrations, it can cause direct suffocation of the fish as it causes the build of a solid material on their gills.

4. Outline the effect of acid rain on buildings.

---

---

---

5. Explain how acid deposition can cause lung diseases.

---

---

---

6. With reference to peat bogs, outline a **positive** effect of acid deposition.

---

---

---

7. With reference to named countries/regions, explain why acid deposition is considered a **regional** problem, as opposed to a global one.

---

---

---

---

---

---

---

---



# Pollution Management Strategies for Acid Deposition

1. Complete the table to list some suggestions for pollution management strategies to tackle acid deposition.

Once you have your chosen list of strategies, **evaluate** each of them. Give one "for" and one "against" comment for each if possible

Strategy	Action	Evaluation
Altering human activities causing the pollution	<hr/> <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/> <hr/>
	<hr/> <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/> <hr/>
Regulate and reduce at point of emission	<hr/> <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/> <hr/>
	<hr/> <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/> <hr/>
Clean-up and restore	<hr/> <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/> <hr/>
	<hr/> <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/> <hr/>

