

Exercise walk-through

9.1

Environmental law: rules, evidence and enforcement

International Baccalaureate · IB Diploma · Environmental Systems and Societies ·

9.1 Environmental law: rules, evidence and enforcement

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

KEY WORDS enforcement • jurisdiction

Objective

Environmental law: rules, evidence and enforcement. Supported HL concept preparation; original classroom practice, not an official IB paper or assessed learner work.

1 Key knowledge and worked examples

■ What would explain this observation?

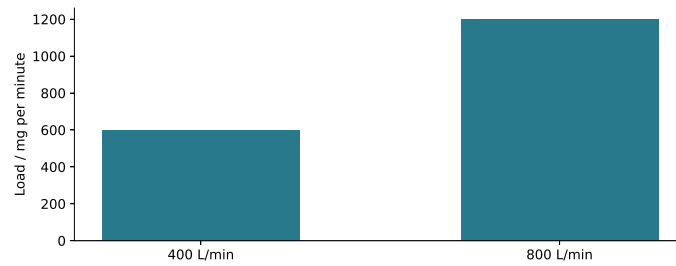
- Two catchments have the same discharge limit but different water quality. A legal rule can influence behaviour only through its coverage, implementation and **enforcement**.
- Start with a prediction. State the quantities or features you would compare, then

decide what evidence could distinguish two explanations.

■ Build the model

- Environmental law defines obligations and permissions within a **jurisdiction**
 - . A discharge permit may specify a concentration, a total load, monitoring and consequences of non-compliance. International agreements require implementation through institutions; signing an agreement alone does not show that an environmental outcome has improved.
- enforcement: Implementation of rules through monitoring and consequences; jurisdic-

tion: The geographical or institutional scope of an authority.



■ **Choose evidence that can test it**

- Distinguish the legal instrument from the evidence about its effect. A concentration limit can be satisfied while total pollutant load rises if flow increases. Evaluate monitoring coverage, detection probability, incentives, access to justice and effects on different groups. An observed change after a policy is compatible with an effect but also with rainfall, industrial changes or other interventions.
- Use an attributed historical or clearly fictional permit and paired monitoring data. Identify the regulated activity, responsible authority, geographical boundary and date. Compare upstream/downstream and before/after observations where available, document sampling gaps, and discuss whose evidence or costs are excluded. Do not present this classroom model as advice about current local law.

■ **Work from known quantities**

- State the known values and their units. Choose the relation because its assumptions fit this case, then rearrange before substitution.
- Known: a fictional permit caps discharge at 2 mg/L. A monitored discharge is 1.5 mg/L at 400 L/min. Load = concentration $\times$ flow = 600 mg/min. At the same concentration and 800 L/min the load is 1,200 mg/min. Both concentration observations satisfy the fictional cap, while the second transports twice the mass.

Example:

A discharge contains 1.2 mg/L at 500 L/min. Calculate transported mass per minute. Use the same sequence: known quantities $\rightarrow$ model $\rightarrow$ relation $\rightarrow$ substitution $\rightarrow$ unit and interpretation.

■ Check the conclusion and its limits

- Compliance with one indicator does not prove ecological safety or fair enforcement. Compare actual outcomes with the policy objective and consider both administrative feasibility and affected communities.
- Return to the original observation. Explain what the result supports, which conditions it assumes, and one way to test a competing explanation.

Warn:

A concentration-compliant discharge necessarily has a small total pollutant load. This claim is false: Compliance with one indicator does not prove ecological safety or fair enforcement. Compare actual outcomes with the policy objective and consider both administrative feasibility and affected communities.

Key:

Environmental law: rules, evidence and enforcement: Distinguish the legal instrument from the evidence about its effect. A concentration limit can be satisfied while total pollutant load rises if flow increases. Evaluate monitoring coverage, detection probability, incentives, access to justice and effects on different groups. An observed change after a policy is compatible with an effect but also with rainfall, industrial changes or other interventions.

Exercises 2.1·2.2

2.1 Which evidence most directly tests whether the fictional rule improves water quality?
Choose one answer.

- **A** Comparable environmental observations with monitoring and confounders recorded
 - **B** The existence of a signed document alone
 - **C** The number of words in the permit
- [1]

2.2 A discharge contains 1.2 mg/L at 500 L/min. Calculate transported mass per minute.
Show the relation, substitution and units.

[2]

Exercises 2.1·2.2

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- **A** Comparable environmental observations with monitoring and confounders recorded
 - **B** The existence of a signed document alone
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2.1 A Distinguish the legal instrument from the evidence about its effect. A concentration limit can be satisfied while total pollutant load rises if flow increases. Evaluate monitoring coverage, detection probability, incentives, access to justice and effects on different groups. An observed change after a policy is compatible with an effect but also with rainfall, industrial changes or other interventions.

2.2 A discharge contains 1.2 mg/L at 500 L/min. Calculate transported mass per minute.
Show the relation, substitution and units.

[2]

2.2 $\text{load} = \text{concentration} \times \text{flow} = 1.2 \times 500 = 600 \text{ mg/min.}$

Exercises 2.3-3.1

2.3 Decide whether this claim is true and justify: A concentration-compliant discharge necessarily has a small total pollutant load. [2]

2.4 Implementation of rules through monitoring and consequences: write the technical term. [1]

3.1 A fictional permit caps concentration at 2 mg/L. Discharges are 1.5 mg/L at 400 and 800 L/min. Compare the cap and mass loads; distinguish legal compliance from impact. [4]

Exercises 2.3-3.1

2.3 Decide whether this claim is true and justify: A concentration-compliant discharge necessarily has a small total pollutant load. [2]

2.3 False. Compliance with one indicator does not prove ecological safety or fair enforcement. Compare actual outcomes with the policy objective and consider both administrative feasibility and affected communities.

2.4 Implementation of rules through monitoring and consequences: write the technical term. [1]

2.4 enforcement. enforcement means Implementation of rules through monitoring and consequences.

3.1 A fictional permit caps concentration at 2 mg/L. Discharges are 1.5 mg/L at 400 and 800 L/min. Compare the cap and mass loads; distinguish legal compliance from impact. [4]

3.1 Both satisfy the stated fictional cap; loads are 600 and 1,200 mg/min. Equal concentration compliance does not imply equal impact. A real legal claim needs the actual jurisdiction and permit.