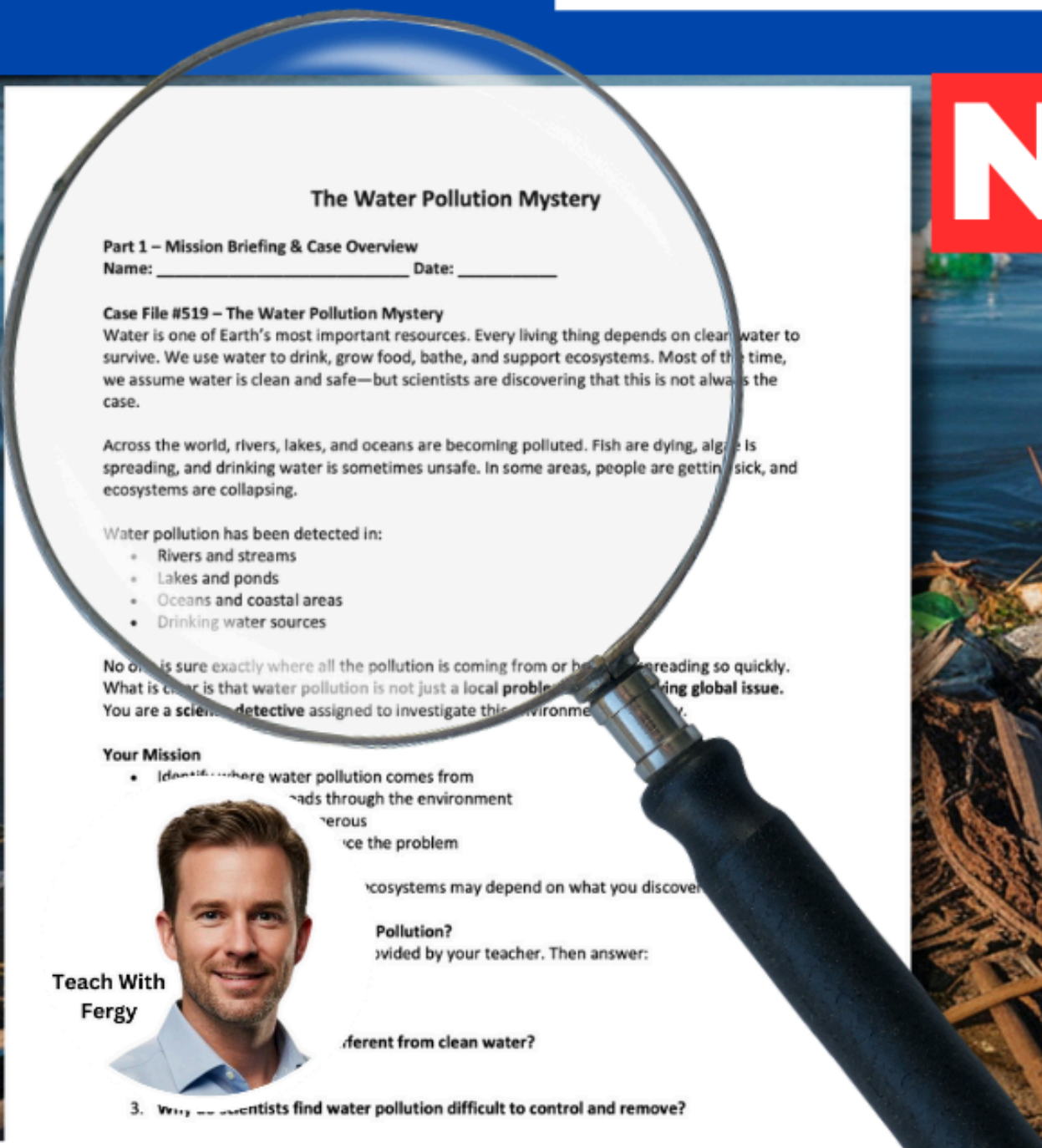


THE WATER POLLUTION MYSTERY

NO PREP



The Water Pollution Mystery

Part 1 – Mission Briefing & Case Overview
Name: _____ Date: _____

Case File #519 – The Water Pollution Mystery
Water is one of Earth's most important resources. Every living thing depends on clean water to survive. We use water to drink, grow food, bathe, and support ecosystems. Most of the time, we assume water is clean and safe—but scientists are discovering that this is not always the case.

Across the world, rivers, lakes, and oceans are becoming polluted. Fish are dying, algae is spreading, and drinking water is sometimes unsafe. In some areas, people are getting sick, and ecosystems are collapsing.

Water pollution has been detected in:

- Rivers and streams
- Lakes and ponds
- Oceans and coastal areas
- Drinking water sources

No one is sure exactly where all the pollution is coming from or how to stop it. Reading so quickly. What is clear is that water pollution is not just a local problem—it's a global issue. You are a science detective assigned to investigate this environmental mystery.

Your Mission

- Identify where water pollution comes from and how it travels through the environment.
- Determine the causes of water pollution and how it affects ecosystems.
- Discover how ecosystems may depend on what you discover.

Pollution?
Provided by your teacher. Then answer:

Teach With Fergy

3. Why do scientists find water pollution difficult to control and remove?

Gamify your students' learning with this interactive and engaging Mystery Activity.

SCROLL
to take a look inside!

**DETECTIVE FILE ON HOW HUMANS
IMPACT THE ENVIRONMENT**





A complete student case file with guided worksheets for every step of the investigation.



10 detailed evidence cards based on real water pollution research and real-world examples that include images, graphs, and text.



A full teacher answer key with sample responses and support for grading.

What You Get

NO-PREP. JUST PRINT TO GO!

Full investigation breakdown

Interpretation of Data

10 Evidence Cards to Determine Culprit

HOW THIS ACTIVITY HELPS YOU

- Saves prep time with a fully structured, print-and-go investigations.
- Drives high engagement while still meeting academic goals as students are interested in what they're doing.
- Builds deep understanding with **real-world relevance** as they analyze real evidence, make connections, and using CER to explain human impact.

10-PART INVESTIGATION

Students:

1. Step into the role of a Science Detective.
2. Examine real scientific evidence from around the world.
3. Track the hidden pathways of water pollution.
4. Interrogate suspects (farms & fertilizer runoff, etc.) and identify the main culprits.
5. Build a scientific case using Claim-Evidence-Reasoning.
6. Propose real solutions that matter.

“

★★★★★ The added images and graphs enhanced the activity. My students were engaged and motivated during the case study, and it was an effective introduction to the topics. - Mystery Resource Buyer”

HOW THIS MYSTERY WILL HELP YOU

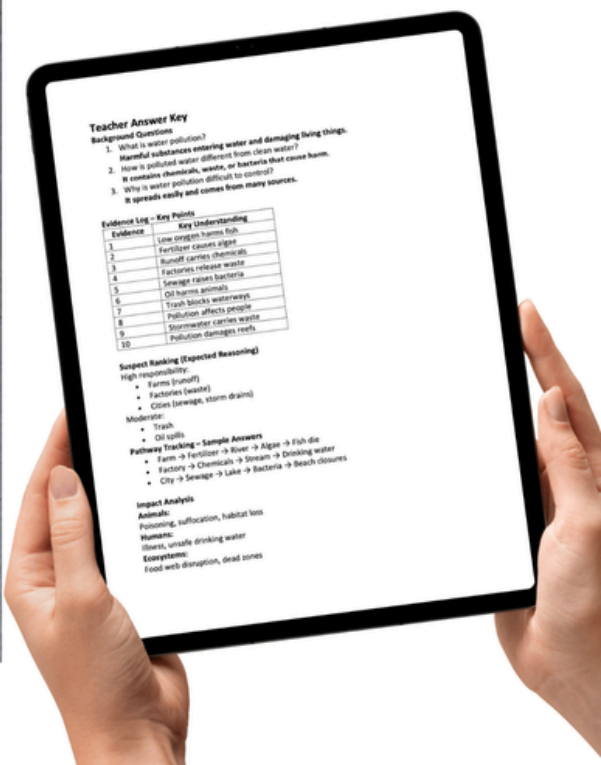


- Prep-FREE and fully editable Mystery Investigation - just print/upload and assign with no materials.
- **Evidence Cards** can be printed with and without images or projected on board.
- Engages every learner through hands-on, high-interest mystery investigations that boost motivation and participation.
- **Builds essential skills** such as graph interpretation, problem-solving, teamwork, creativity, and communication.

What Will Your Students Learn?

FULLY EDITABLE AND READY-TO-GO INVESTIGATION

**FULL
ANSWER KEY**



EVIDENCE CARDS

**GREAT FOR TEACHING
SCIENTIFIC REASONING**

- ✓ What water pollution is, where it comes from, and how it enters waterways
- ✓ How water pollution spreads through rivers, lakes, oceans, ecosystems, and food chains
- ✓ Why water pollution is harmful to humans, animals, plants, and entire ecosystems
- ✓ How to analyze data and evidence to identify patterns and draw conclusions
- ✓ How to use Claim-Evidence-Reasoning (CER) to support scientific arguments
- ✓ How to trace cause-and-effect relationships in complex environmental systems

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Get all my Environmental Science Mystery Activities plus all additional ones I create in the future.

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MICROPLASTICS MYSTERY DETECTIVE FILE ON PLASTIC POLLUTION & HUMAN IMPACT



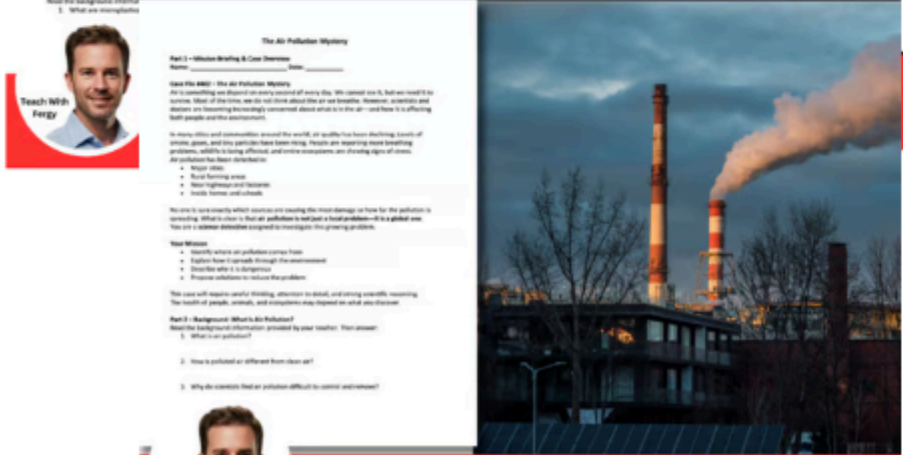
DEFORESTATION & HABITAT DESTRUCTION MYSTERY



THE RESOURCE DEPLETION & MINING MYSTERY



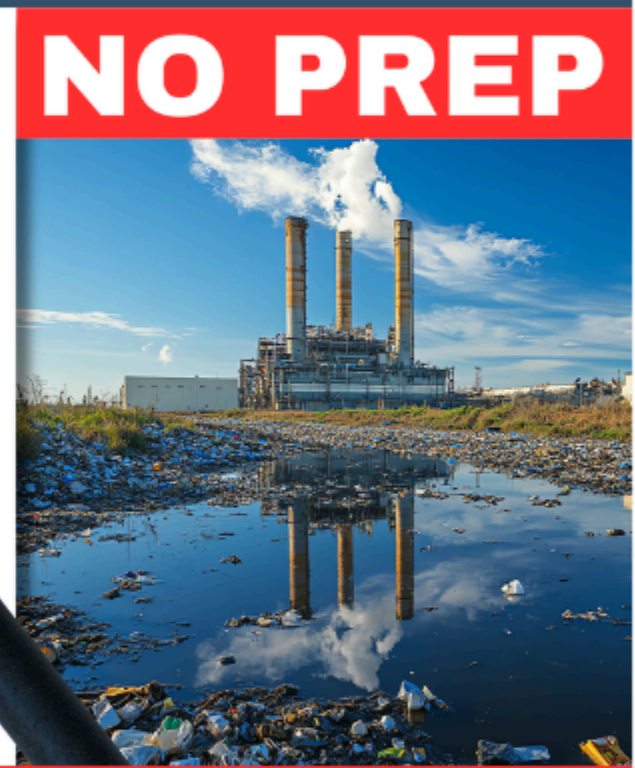
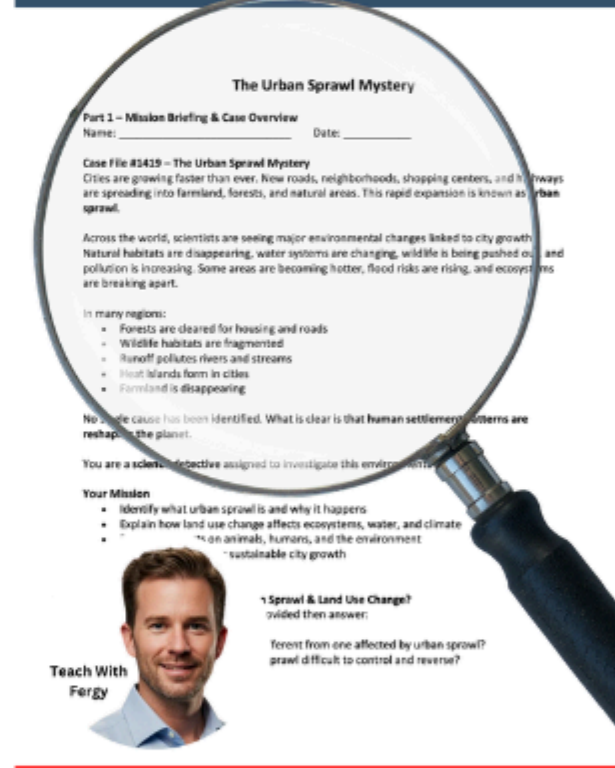
THE AIR POLLUTION MYSTERY DETECTIVE FILE ON AIR POLLUTION & THE ENVIRONMENT



THE INVASIVE SPECIES MYSTERY



DETECTIVE FILE ON HOW HUMANS IMPACT THE ENVIRONMENT



DETECTIVE FILES ON HOW HUMANS IMPACT THE ENVIRONMENT

Plus Many More!
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Part 1 & 2

The Water Pollution Mystery

Part 1 – Mission Briefing & Case Overview

Name: _____ Date: _____

Case File #519 – The Water Pollution Mystery

Water is one of Earth's most important resources. Every living thing depends on clean water to survive. We use water to drink, grow food, bathe, and support ecosystems. Most of the time, we assume water is clean and safe—but scientists are discovering that this is not always the case.

Across the world, rivers, lakes, and oceans are becoming polluted. Fish are dying, algae is spreading, and drinking water is sometimes unsafe. In some areas, people are getting sick, and ecosystems are collapsing.

Water pollution has been detected in:

- Rivers and streams
- Lakes and ponds
- Oceans and coastal areas
- Drinking water sources

No one is sure exactly where all the pollution is coming from or how it is spreading so quickly. What is clear is that **water pollution is not just a local problem—it is a growing global issue**. You are a **science detective** assigned to investigate this environmental mystery.

Your Mission

- Identify where water pollution comes from
- Explain how it spreads through the environment
- Describe why it is dangerous
- Propose solutions to reduce the problem

The health of people, animals, and ecosystems may depend on what you discover.

Part 2 – Background: What Is Water Pollution?

Read the background information provided by your teacher. Then answer:

1. **What is water pollution?**
2. **How is polluted water different from clean water?**
3. **Why do scientists find water pollution difficult to control and remove?**

Part 1 – Mission Briefing & Case Overview

Students are introduced to the water pollution problem and take on the role of science detectives. They learn their mission and begin the investigation with a real-world hook.

Part 2 – Background: What is Water Pollution?

Students read a short background passage and answer guiding questions to build foundational understanding before analyzing evidence.

Part 3 & 4

Part 3 – Evidence Log

Students begin examining the evidence cards and record key information, observations, and insights in their evidence log.

Part 3 – Evidence Log

As you examine each evidence card, record key information below.

Evidence #	Key Understanding
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Repeat this structure for each Evidence Card and place the key information in the chart above.

Evidence Card # _____: _____

- Summarize the evidence in your own words:
- What does this evidence suggest about water pollution?
 - ☐ Where it comes from
 - ☐ How it spreads
 - ☐ Its impact on living things
 - ☐ All of the above

Explain your choice:

- What question does this evidence raise for you?

Part 4 – Suspect List: What Is Causing the Problem?

Below are possible “suspects” in this case. Rank them from 1 (most responsible) to 5 (least responsible).

Suspect	Rank	Why You Ranked It This Way
Factories & industrial waste		
Farms & fertilizer runoff		
Cities & sewage systems		
Litter & plastic trash		
Oil spills & fuel leaks		

Evidence Card 7 – Plastic Trash in a Stream

Plastic bottles, bags, and wrappers were piled up in part of a stream, blocking water flow. This buildup creates physical barriers that trap debris, reduce water movement, and destroy habitats for fish and insects.



Detective Notes Prompt:

How can trash change water flow and animal habitats?

Evidence Card 3 – Farm Runoff After Rain

After a heavy rainfall, muddy water flowed from nearby farms into a stream. The runoff carried soil, fertilizers, and chemicals, and the strong chemical smell suggested the presence of nutrients or pesticides entering the water system.



Detective Notes Prompt:

How could farming practic

Evidence Card 2 – Green Algae Bloom

A lake was covered in thick, bright green algae that spread across the surface. The algae blocked sunlight from reaching underwater plants, reducing photosynthesis and lowering oxygen levels in the water as algae died and decomposed.



Detective Notes Prompt:

How might excess nutrients affect water ecosystems?

Part 4 – Evidence Analysis

Students summarize each piece of evidence, identify what it reveals about water pollution, and generate questions, building critical thinking and reasoning skills.

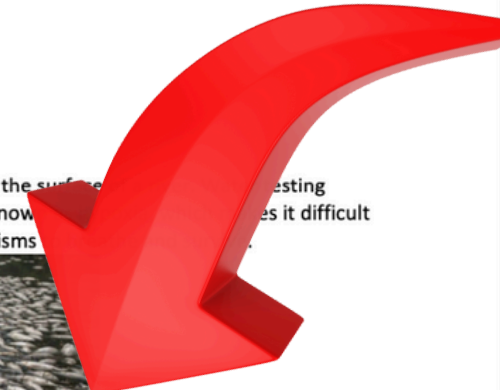
EVIDENCE CARDS

➤ All Evidence Cards come in two versions - *With images and graphs and Without* and can be printed or projected as needed.

➤ Students analyze each Evidence Card and record the following in their **Evidence Log**

1. Summarize the evidence in their own words.
2. Determine what this evidence suggests
 - ☐ What causes it
 - ☐ Pathway
 - ☐ Its impact on living things
3. Explain what question(s) this evidence raises for them?

Images & Graphs



Evidence Cards

Evidence Card 1 – Dead Fish in the River
A large number of fish were found floating on the surface of a river. Water testing revealed very low oxygen levels, a condition known as hypoxia, which makes it difficult or impossible for fish and other aquatic organisms to breathe and survive.



Detective Notes Prompt:
What could cause oxygen levels to drop in water?

Evidence Card 2 – Green Algae Bloom
A lake was covered in thick, bright green algae that spread across the surface. The algae blocked sunlight from reaching underwater plants, reducing photosynthesis and lowering oxygen levels in the water as algae died and decomposed.



Detective Notes Prompt:
How might excess nutrients affect water ecosystems?

Evidence Card 3 – Farm Runoff After Rain
After a heavy rainfall, muddy water flowed from nearby farms into a stream. The runoff carried soil, fertilizers, and chemicals, and the strong chemical smell suggested the presence of nutrients or pesticides entering the water system.

Detective Notes Prompt:
How could farming practices affect water quality?

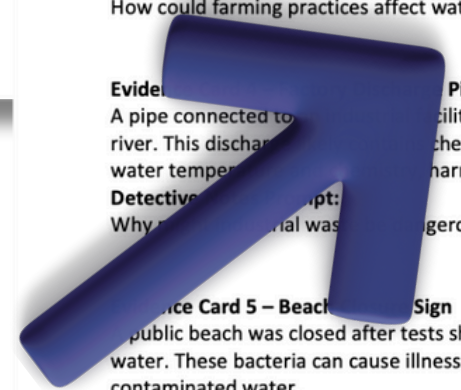
Evidence Card 4 – Sewage Treatment Plant Pipe
A pipe connected to a sewage treatment plant was releasing dark-colored water directly into a river. This discharge contained chemical waste or heated water that can change water temperature and harm aquatic life.

Detective Notes Prompt:
Why is this material dangerous in water?

Evidence Card 5 – Beach Sign
A public beach was closed after tests showed high levels of harmful bacteria in the water. These bacteria can cause illness in people who swim or come into contact with contaminated water.

Detective Notes Prompt:
What might cause bacteria levels to increase?

No Images



Evidence Cards – No Images

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Evidence Card 5 – Beach Sign
A public beach was closed after tests showed high levels of harmful bacteria in the water. These bacteria can cause illness in people who swim or come into contact with contaminated water.

Detective Notes Prompt:
What might cause bacteria levels to increase?

Part 5-7

Part 5 – Pathway Tracking: How Does Water Pollution Spread?

Use arrows to show how water pollution moves from source to water to living things.

Source → Water → Living Organisms

Example: Farm → Fertilizer → River → Fish → Birds → Ecosystem damage

Your turn:

Part 6 – Impact Analysis

Impact on Animals

1. What problems can water pollution cause for animals?

Impact on Humans

2. Why are scientists concerned about water pollution and human health?

Impact on Ecosystems

3. How might water pollution affect food chains and habitats?

Part 7 – The Big Question

How did water pollution become such a widespread problem?

Write a clear explanation using evidence from the case.

Part 5 – Suspect List

Students rank possible sources of water pollution, defend their choices, and determine which human activities are most responsible for the problem.

Part 6 – Pathway Tracking

Students trace how water pollution moves from everyday sources through the environment and into living organisms, strengthening cause-and-effect understanding.

Part 7 – Impact Analysis

Students analyze how water pollution affects animals, humans, and ecosystems, using evidence from the case to support their answers.

Part 8-10

Part 8 – Claim-Evidence-Reasoning (CER)

Claim

What is the main cause of water pollution in this case?

Evidence

List two pieces of evidence from the case that support your claim.

- 1.
- 2.

Reasoning

Explain how your evidence supports your claim.

Part 9 – Solutions & Action Plan

Personal Actions (Things individuals can do)

- 1.
- 2.

Community / School Actions

- 1.
- 2.

Government or Industry Actions

- 1.
- 2.

Part 10 – Reflection

1. One thing that surprised me in this case was:

2. One change I would make after learning this information is:

Part 8 – The Big Question

Students synthesize all their learning to explain how water pollution ended up everywhere, using evidence from the investigation.

Part 9 – Claim-Evidence-Reasoning (CER)

Students write a structured scientific argument, making a claim, supporting it with evidence, and explaining their reasoning.

Part 10 – Reflection and Solutions

Students propose realistic actions at the personal, school, and government levels, moving from awareness to problem-solving.

Full Teacher Answer Key

Teacher Answer Key

Background Questions

- What is water pollution?
Harmful substances entering water and damaging living things.
- How is polluted water different from clean water?
It contains chemicals, waste, or bacteria that cause harm.
- Why is water pollution difficult to control?
It spreads easily and comes from many sources.

Evidence Log – Key Points

Evidence	Key Understanding
1	Low oxygen harms fish
2	Fertilizer causes algae
3	Runoff carries chemicals
4	Factories release waste
5	Sewage raises bacteria
6	Oil harms animals
7	Trash blocks waterways
8	Pollution affects people
9	Stormwater carries waste
10	Pollution damages reefs

Suspect Ranking (Expected Reasoning)

High responsibility:

- Farms (runoff)
- Factories (waste)
- Cities (sewage, storm drains)

Moderate:

- Trash
- Oil spills

Pathway Tracking – Sample Answers

- Farm → Fertilizer → River → Algae → Fish die
- Factory → Chemicals → Stream → Drinking water
- City → Sewage → Lake → Bacteria → Beach closures

Impact Analysis

Animals:

Poisoning, suffocation, habitat loss

Humans:

Illness, unsafe drinking water

Ecosystems:

Food web disruption, dead zones

Big Question – Sample Response

How did water pollution become such a widespread problem?

Water pollution became widespread because many human activities release waste and chemicals into waterways. Evidence from the case shows that **farms release fertilizer and chemicals into streams after rain (Evidence Card 3), factories discharge polluted water into rivers (Evidence Card 4), and cities send stormwater and sewage into waterways (Evidence Cards 5 and 9)**. Trash and oil spills also add pollution to water (Evidence Cards 6 and 7). These pollutants are carried by rivers and streams, which spread them to lakes, oceans, and drinking water sources. Because pollution comes from many places and moves easily through water, it builds up over time and affects animals, ecosystems, and people. This is why water pollution is not just a local problem, but a widespread environmental issue.

CER Example

Claim:

Farm runoff and industrial waste are main causes.

Evidence:

Evidence Card 3 and 4

Reasoning:

They release large amounts of nutrients and chemicals directly into water.

Solutions – Expected Ideas

Personal:

Reduce litter, use fewer chemicals

Community:

Cleanups, better drainage systems

Government:

Pollution laws, water treatment upgrades

Background Reading: What Is Water Pollution?

Water is something we use every day for drinking, bathing, growing food, and staying healthy. We often assume that water is clean and safe, but scientists are increasingly concerned about **water pollution**—harmful substances in water that can damage living things and the environment.

Water pollution is made up of chemicals, waste, and harmful materials that enter rivers, lakes, oceans, and groundwater. These pollutants come from both natural and human sources. Factories, farms, cities, oil spills, litter, and sewage systems can all release substances into water. Some water pollution is easy to see, such as trash or oil on the surface, while other pollutants cannot be seen but are still dangerous.

Clean water is mostly free of harmful substances and is safe for plants, animals, and humans. Polluted water contains extra chemicals, waste, or bacteria that do not belong there and can cause harm.

How Is Polluted Water Different from Clean Water?

Clean water supports healthy ecosystems and safe drinking supplies. It allows plants to grow, animals to survive, and people to stay healthy. Polluted water contains substances such as fertilizers, sewage, chemicals, oil, and bacteria that can harm living things.

Polluted water can sometimes be seen as murky, smelly, or covered with algae. It can cause fish to die, make water unsafe to drink, and damage habitats. People who drink or swim in polluted water may get sick, and animals can be poisoned or lose their homes.

Another key difference is that polluted water can **move easily through the environment**. Rivers and streams carry pollution from one place to another, spreading it to lakes, oceans, and even drinking water sources. This means pollution created in one area can affect many other places.

Why Is Water Pollution So Difficult to Control and Remove?

Water pollution is difficult to control because it comes from **many sources at the same time**. Factories, farms, cities, homes, and transportation all add pollutants to water. Even if one source is cleaned up, others may still be releasing harmful substances.

Water is always moving, which allows pollution to spread quickly and widely. Unlike solid trash, water pollution cannot be easily collected or cleaned up. Once chemicals or waste are in the water, they are hard to remove.

Water pollution is also **constantly being created**. Every time it rains, runoff can carry fertilizers, oil, and trash into streams and rivers. As long as human activities continue, new pollution is added. This makes water pollution an ongoing challenge for scientists and governments.

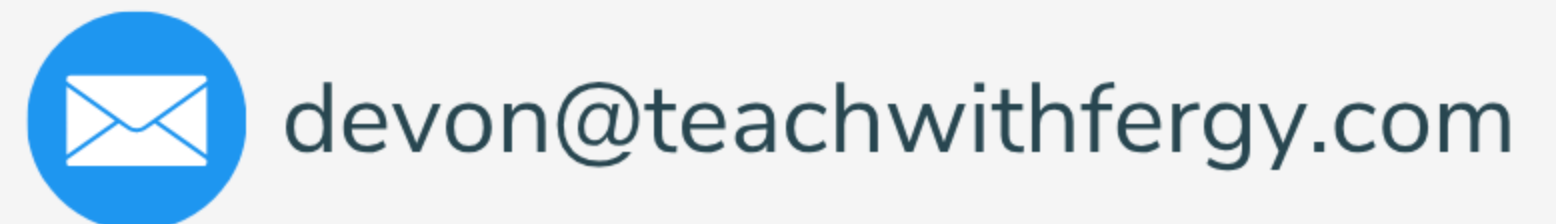
Background Reading

As a special bonus, I want to send you a few resources that you can use in your classroom tomorrow. Completely free and geared towards what you teach!



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**for your interest
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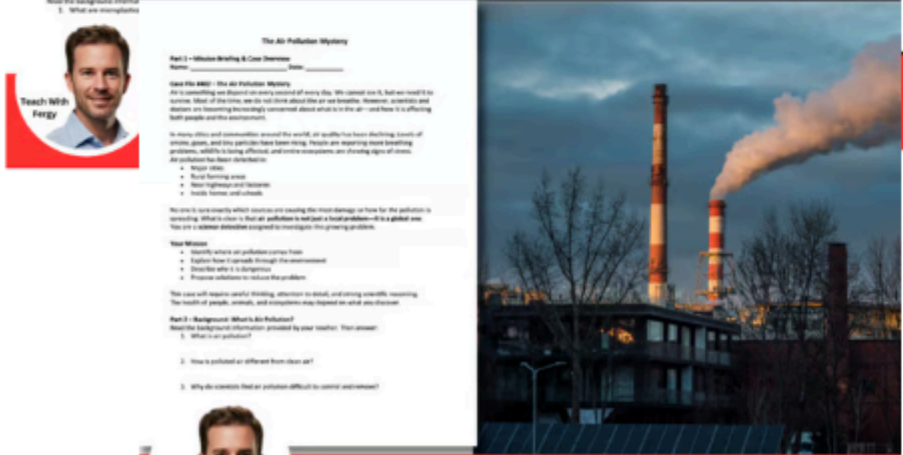
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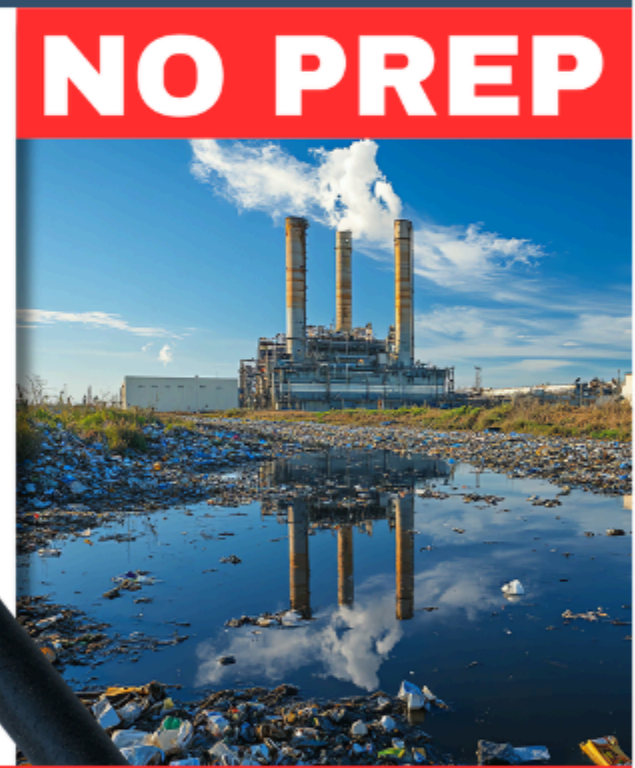
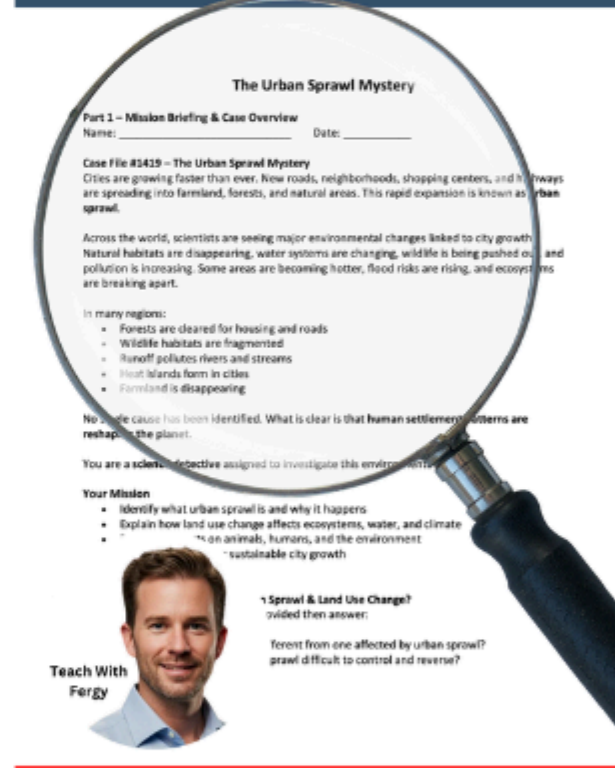
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