Teacher Resource

Ozone Recovery

EPISODE 1
7th February 2023

KEY LEARNING
Students will develop a deeper understanding of what the ozone layer is, the consequences of damage to it and what a recent UN assessment found about the `hole' in the ozone layer.

CURRICULUM
Science – Year 5 & 6
Scientific knowledge is used to solve problems and inform personal and community decisions.

Focus Questions

Discuss the BTN story as a class and record the main points of the discussion. Students will then respond to the following:

1. Without ozone, what would life be like on Earth?
2. Where is the `hole' in the ozone layer?
3. What is the name of the international agreement that banned ozone depleting chemicals?
    a. Paris Agreement
    b. Montreal Protocol
    c. Kyoto Protocol
4. When do scientists expect the hole over Antarctica will `mend'?
5. How did this story make you feel about taking action on environmental issues?

Activity: See, Think and Wonder

After watching the BTN Ozone Recovery story, students will respond to the following questions:

- What did you SEE in this video?
- What did you LEARN from this story?
- What do you WONDER about this story?
- What QUESTIONS do you have about this story?

Activity: Class Discussion

Discuss the BTN Ozone Recovery story as a class. Ask students to record what they know about the ozone layer. What questions do they have? Use the following questions to help guide discussion:

- What is ozone?
- What is the ozone layer?
- Why do we need the ozone layer? What does it protect us from?
- Excessive UV light can cause…
- Name the substance that caused damage to the ozone layer?
- What was done to fix the ozone layer?
- What has a recent United Nations assessment of the ozone layer found?

Activity: Glossary

Students will brainstorm a list of key words that relate to the BTN Ozone Recovery story. Here are some words to get them started.

ATMOSPHERE	OZONE	GAS
ULTRAVIOLET RAYS	OZONE LAYER	DEPLETING

Further investigation: Tricky Words

Students will choose additional keywords and terms to add to their class glossary that are tricky. For example, molecule, chlorofluorocarbons (CFCs) or Montreal Protocol. Students will find a definition and explain to their classmates what the keywords mean.

Activity: Six Hat Thinking

As a class, use Edward De Bono's Six Hat Thinking to explore the information raised in the BTN Ozone Layer story. Students will take it in turns answering questions in relation to what they already know about the issue, what they have learned from the story and what they want to learn further about the topic. Ask students to respond to the following questions:

- How did the Ozone Layer story make you feel?
- What do you know about the ozone layer?
- What have you learnt from the story?
- Were there any positives from the story? If so, what were they?
- What are some of the negatives or challenges that you learnt from the story?
- Why is it important to learn about the ozone layer?
- What questions were raised during this activity?
- What do you want to learn further about this topic?

Reflection

After this activity, ask students to reflect on what they have learnt. Students can include details about how their thinking on this issue has changed.

Activity: Research project

Discuss the information raised in the BTN Ozone Recovery story. What questions were raised in the discussion and what are the gaps in students' knowledge? The following KWLH organiser provides students with a framework to explore their knowledge on this topic.

What do I **know**?	What do I **want** to know?	What have I **learnt**?	**How** will I find out?

Students will develop their own question/s to research or choose one or more of the questions below.

- What is ozone and why is it important?
- What are the consequences of ozone depletion? How have humans contributed to the problem?
- Where is the hole in the ozone layer? What is the current status of the hole?
- What is the Montreal Protocol and what has it achieved?
- How is ozone measured?
- What has a recent United Nations assessment of the ozone layer found?

Activity – Choose a project

Individually or in small groups, students will choose one of the following projects to work on and then present their findings to the class.

Quiz
Create a true of false quiz to test your classmate's knowledge about the ozone layer.

Summary
Write a summary of the story. What was the story about? Explain in your own words what the ozone layer is, how it was damaged and what has been done to repair it.

Create a diagram
Draw a labelled diagram that shows the Earth's surface, troposphere, stratosphere, ozone layer and the 3 types of UV rays - UV-A, UV-B and UV-C

Group Discussion
In small groups, discuss the following statement *Ozone action sets a precedent for climate action.*
Share the main points of your discussion with the class.

Activity: Ozone Layer Quiz

1. What is the chemical formula for ozone?

A. CO_2

B. O_2

C. O_3

2.What does CFC stand for?

A. Carbon fluoro compound

B. Chlorofluorocarbon

C. Carbon fuel cycle

3.What were CFCs used in?

A. Aerosol sprays

B. Air conditioners

C. Refrigerators

D. All of the above

4.What is the name of the international agreement that banned ozone depleting chemicals?

A. Paris Agreement

B. Montreal Protocol

C. Kyoto Protocol

5.When was the agreement made?

A. 1977

B. 1987

C. 1997

6.It's estimated that the hole in the ozone layer over Antarctica will mend in…

A. 43 years

B. 53 years

C. 63 years

Quiz Answers: 1C, 2B, 3D, 4B, 5B, 6A

Useful Websites

- United Nations' scientific assessment finds ozone layer is healing, 35 years after world stopped producing 'chomping' chemicals – ABC News
- What is the ozone layer, why was it damaged, and what's been done about it? – Newsround
- Ozone Improvement – BTN
- Basics on Ozone - NASA
- The Ozone Hole – NASA Earth Observatory for Kids