



High School Science Virtual Learning

Environmental Science

Reducing Ozone Depletion

April 20, 2020



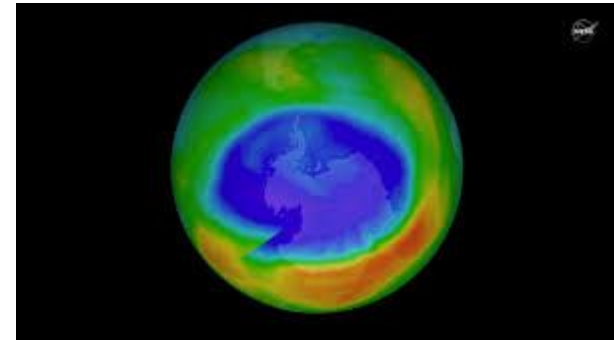
High School Environmental Science

Lesson: April 20, 2020

Objective/Learning Target:

Students will analyze strategies for reducing Ozone depletion and construct goals.

1. Where is most of the Ozone depletion occurring?
2. What is the compound best linked to Ozone depletion?





1. Over the Arctic and Antarctic

2. CFCs



Lesson Activity:

Directions: You will be reading an article that goes over the ways to limit CFCs and heal the Ozone. As you are reading, you will want to take notes. Here is an example of how you could set your notes up:

Paragraph	What are CFCs	Why were CFCs used?	CFCs can destroy	Antarctic "Ozone Hole"	Montreal Protocol	Substitutes	The future
Summary	...						

Link(s): [CFCs Article](#)



Practice

You will use the information from the activity on slide 5 to answer the following questions.



Practice Questions

1. What was used before CFCs in refrigerators?
2. In 1932 what was used in the first self-contained air-conditioning unit?
3. Where do CFCs decompose?
4. Ozone absorbs harmful ultraviolet radiation in what wavelengths?
5. What were some of the factors that made the hole greater over the Antarctic?



Answer Key

Once you have completed the practice questions check with the work.

1. Toxic gasses, ammonia, methyl chloride, or sulfur dioxide.
2. Freon (CFC-11)
3. Upper Atmosphere or stratosphere.
4. Between 280 and 320 nm of the UV-B band.
5. Cold temperatures of the region, dynamic isolation of this hole, and synergistic reactions of chlorine and bromine.



More Practice

You will use the information from the activity on slide 5 to answer the following questions.

More Practice Questions

1. What provision did the Montreal Protocol have?
2. After the 1992 amendment, what substances were to be eliminated by 2000?
3. What are the two classes of halocarbon substitutes for other uses?
4. What is the atmospheric lifetime of HCFC-22 and CFC-12?
5. Why is Nitrous Oxide a remaining problem?



Answer Key

Once you have completed the practice questions check with the work.

1. To reduce production levels of certain compounds by 50% relative to 1986 before the year 2000.
2. CFC- 11, -12, -113, -114, -115, Halons, methyl chloroform, carbon tetrachloride, methyl bromide, hydrobromofluorocarbons, and bromochloromethane.
3. Hydrochlorofluorocarbons (HCFCs) and hydrofluorocarbons (HFCs)
4. HCFC-22 has a lifetime of 12 years, while CFC-12 has 100 years.
5. Nitrous Oxide is the 3rd strongest greenhouse gas, and it depletes the ozone because it forms nitric oxide during destruction in the stratosphere.



Additional Practice

If you are still struggling to look at how CFCs are being phased out, take a look at the following resources:

[European report on policy results](#)

[China takes steps to reduce depletion](#)