Cause and Effect in Texts

Grade 5 Reading Worksheet

Name _____ Date _____

Circle the answer.

READ THIS FIRST

The Hole in the Sky That Is Healing

High above the clouds, about 9 to 22 miles up, lies a thin layer of gas called ozone. You cannot see it or smell it, but it does an important job. The ozone layer soaks up most of the sun's ultraviolet, or UV, rays. Too much UV light can burn skin, harm eyes and damage plants. Without the ozone layer, life on Earth would be much harder.

In the 1980s, scientists made a worrying discovery. Each spring, the ozone layer above Antarctica was becoming dangerously thin. In some places, more than half of it was gone. People began calling this thin patch the ozone hole.

Scientists traced the problem to chemicals called CFCs. For decades, CFCs had been used in refrigerators, air conditioners and spray cans. They seemed perfect because they did not burn or react with other substances. However, that same stability meant they lasted a very long time in the air. Slowly, CFCs drifted upward until they reached the ozone layer.

Up there, strong sunlight broke the CFCs apart. This released chlorine, a gas that destroys ozone. A single chlorine particle can break down thousands of ozone particles. Because of this chain reaction, a small amount of CFCs caused a great deal of damage. The hole formed over Antarctica because the extremely cold clouds there speed up the process.

Once people understood the cause, they acted. In 1987, countries signed an agreement called the Montreal Protocol. They promised to stop making CFCs and other ozone-harming chemicals. Companies invented new ways to cool refrigerators and fill spray cans. Eventually, every country in the United Nations joined the agreement.

The results took time. Because CFCs last so long, the ones already in the air kept causing harm for years. But by the 2010s, scientists could measure the ozone hole shrinking. Today they expect the ozone layer over Antarctica to recover by about 2066.

The story of the ozone hole shows how one change can lead to another, and another. A useful chemical caused damage no one expected. Then careful science and teamwork began to reverse the harm. Many scientists call the Montreal Protocol one of the most successful environmental agreements in history.

1. What effect does the ozone layer have on sunlight reaching Earth?
   - It lets more UV rays reach the ground.
   - It turns the UV rays into clouds.
   - It makes the sunlight warmer.
   - It soaks up most of the UV rays.

2. What directly destroyed the ozone high in the air?
   - new cooling methods invented by companies
   - chlorine released from broken CFCs
   - UV rays that grew stronger each spring
   - spray cans that caught fire in the sky

3. Why were CFCs able to reach the ozone layer?
   - Strong sunlight pulled them up from the ground.
   - They lasted so long that they slowly drifted upward.
   - Companies sent them up to cool the air above Antarctica.
   - They burned easily and rose into the sky like smoke.

4. Why did a small amount of CFCs cause so much damage?
   CFCs were used in every single home on Earth for decades.
   Each CFC particle stayed in one spot for a hundred years.
   One chlorine particle can break down thousands of ozone particles.
   The ozone layer is only a few feet thick everywhere.

5. Why did the ozone hole form over Antarctica?
   The ozone layer there had always been thin.
   Its extremely cold clouds speed up the damage.
   Antarctica gets no sunlight at any time.
   Most spray cans were used near Antarctica.

6. What was one effect of the Montreal Protocol?
   Scientists discovered the ozone hole.
   Companies found new ways to cool refrigerators.
   The ozone layer recovered in one year.
   CFCs began drifting up into the sky.

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Answer Key - Grade 5 Reading Worksheet

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