

第2講

問題 1

次の英文を読んで、以下の設問に答えなさい。

Each year since the late 1970s, much of the protective layer of ozone above Antarctica has disappeared during September, creating what is popularly known as the ozone hole. How did researchers discover this hole in the earth atmosphere and the dangerous consequences of the ozone loss?

5 It is now known that a man-made class of chemicals, *chlorofluorocarbons (CFCs), widely used until recently in spray cans and refrigerators, is responsible for much of our ozone reduction. (1)However, the discovery of the ozone hole and the damaging effects of CFCs followed a path full of twists and turns. Investigators did not set out to determine whether human activity affects our
10 environment, nor did they know much about chemical pollutants. Instead, they began with basic questions about the nature of the earth's atmosphere.

It was not until the 1920s that G.M.B. Dobson developed a machine that could measure overall amounts of ozone and started a program for the regular measurement of atmospheric ozone levels. (2)Other advances in chemistry, many
15 of them unrelated to atmospheric research, led to the detection of many other minor atmospheric elements, among which were CFCs. They were first detected in the early 1970s by the British scientist James Lovelock. He correctly concluded that the gas was carried by large-scale wind motions. He also stated that CFCs were not a risk to the environment, a conclusion soon to be proven wrong.

20 Learning of Lovelock's finding in 1972, an American chemist, F. Rowland, although unaware that CFCs could harm the environment, began to wonder about the ultimate fate of these elements. Joined by M. Molina, he showed that CFCs remain in the lower atmosphere for decades, while at altitudes above 18 miles, the high energy radiation from the sun hits directly on the CFC *molecules, breaking
25 them apart into *chlorine and other atoms. From the results of earlier research, they concluded that a simple chlorine atom can remove as many as 100,000 molecules of ozone. In 1974, Rowland and Molina made a disturbing prediction: if industry continues to release a million tons of CFCs into the atmosphere each year, atmospheric ozone would drop by 7 to 13 percent.

30 Recognition of the danger created by ozone reduction has led to a global ban on CFC production. Although it will take a long time for the ozone to return to 1970s levels, thanks to the research that led to early recognition of the problem and the

steps that have been taken to solve it, ③the possible consequences are much less severe than they would otherwise have been.

- (注) chlorofluorocarbons : クロロフルオロカーボン (俗称, フロンガス)
chlorine : 塩素 molecules : 分子

問 1 下線部(1), (2)を日本語に訳せ。

問 2 以下の英文はオゾン層破壊の原因となる物質が生成されるまでの過程を, 本文に沿って要約したものである。空所に適切な単語を入れよ。

After remaining in the (a) atmosphere for decades, the (b) molecules go up in the air and get broken by high energy from the (c) into (d) and others.

問 3 they, otherwise の内容を明らかにした上で, 下線部(3)を日本語に訳せ。

問 4 本文の内容にもっとも近いものを, 次の(1)~(7)の中から 3 つ選べ。

- (1) Responsibility for much of the ozone reduction lies in the use of chlorofluorocarbons.
- (2) Scientists first began to investigate the earth's atmosphere for the purpose of detecting elements which caused air pollution.
- (3) The production of CFCs is now forbidden all over the world, because they yield an element which destroys molecules of ozone.
- (4) Ozone holes above Antarctica have been disappearing since the late 1970s.
- (5) The dangerous consequences of CFCs in the atmosphere were first pointed out by James Lovelock.

(選択肢は次のページにも続く)

- (6) Soon after G.M.B. Dobson created a machine for the measurement of ozone levels, scientists detected the harmful effects of CFCs on ozone in the atmosphere.
- (7) One of Lovelock's conclusions is now regarded as wrong, because he stated that CFCs were not harmful to the environment.

問題 2

次の下線部分を英語に訳しなさい。

アテネ五輪の日本選手団の公式応援歌「夢がチカラ」の一節に、⁽¹⁾「誰でも自由に夢を見られるんだよ 叶えるのは魔法じゃない 自分の力」という一節がある。⁽²⁾競技で自分の限界を試そうとするアスリートへの応援歌は、夢を信じて前に進もうとする、すべての人への応援歌でもあろう。