



Prize Winner

Science Writing Year 3-4

Danni Wang

Pilgrim School



AIR QUALITY

INTRODUCTION

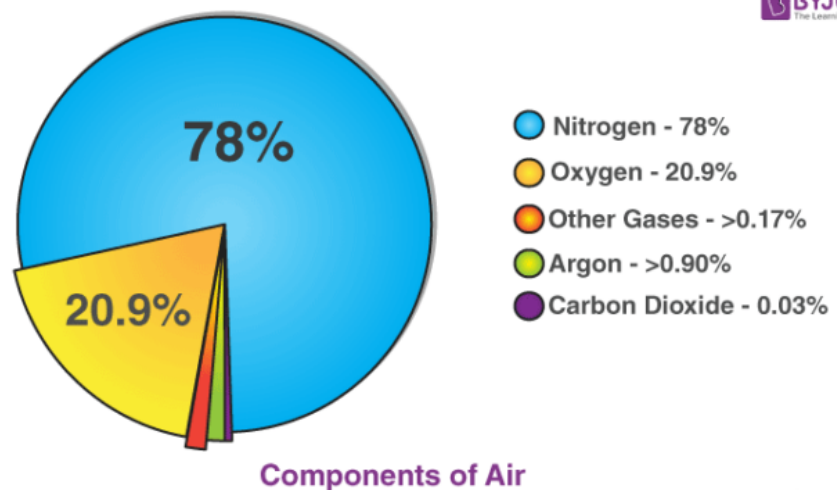
Air is an invisible mixture of gases that surrounds our planet. It contains many important gases such as 20.9% Oxygen (O_2), 78% Nitrogen (N) and 1% other gases including Carbon dioxide (CO_2).

Unfortunately, in the past 20 years, air quality started to get a lot more poisonous than normal. Carbon dioxide (CO_2) has increased by 12%, causing global warming and

extreme weather.

An increase of PM2.5 (particulate matter) in the air can cause

health issues to our body in the long term and short term, such as lung disease and asthma attacks.

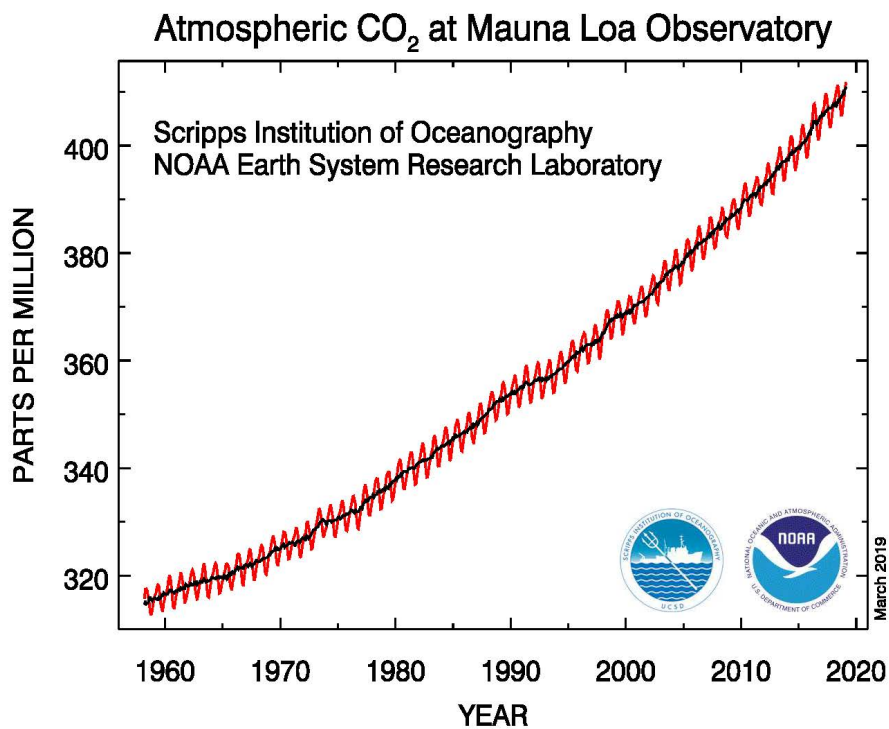


CARBON DIOXIDE

Carbon dioxide (CO₂) is an odourless gas that both humans and animals breathe out. Plants breathe in Carbon dioxide, and use it along with sunlight, in the process of photosynthesis. As a result of this process, plants will produce Oxygen (O₂) for us to breathe.

It seems like the right amount of carbon dioxide is very important for humans and animals to live. However, too much carbon dioxide can contribute to human-caused global warming. Our population in 2000 was only 6,082,966,429, but in 2020, it was 7,794,798,739. In the last 20 years, the world population has increased about 30%. With the increase of population, we have to tear down more forests to build more houses to meet our basic living requirements.

Hence, less plants will absorb carbon dioxide. In addition, the development of technology is faster and gives people a high quality of life. People use more and more private cars everyday to travel from one place to another place instead of public transportation. Unfortunately, cars burn the fuel to drive, and the burning fuel releases carbon dioxide into the atmosphere. This impact is magnified due to the ability of carbon dioxide absorption decreased because of fewer trees. Therefore, a huge amount of carbon dioxide is released into the atmosphere.



The worst thing is that carbon dioxide can not escape from the atmosphere. Consequently, our atmosphere is getting warmer, and our climate is changing.

In 2021, there were 17 extreme weather events around the world from climate change. For example, there was a flood in NSW in March last year. Thankfully, there was no report of death. However, China was not that lucky. In July 2021, Henan province in China, there was severe rainfall and flood killing over 300 people. 12 people lost their lives in a subway and the survivors said that they could not breathe.

Particulate matter (PM10 and PM2.5)

Particulate matter (PM) is not a single pollutant, it is actually a mixture of any chemical of different varieties, such as nitrates, sulphates, organic chemicals, metals, soil or dust particles, and allergens. Scientists describe particulate matter as EXTREMELY small, solid particles and liquid droplets suspended in the air. There are 2 different types of particulate matter called PM 10 and PM2.5. When the diameter of a PM is 10 micrometres or less, it is called PM10. When the diameter of a PM is 2.5 micrometres or less, it is called a PM2.5. Compared with PM10, PM2.5 is a lot more dangerous to our health. Because PM2.5 is so tiny, it can be breathed into our lungs and go into our bloodstream more easily.

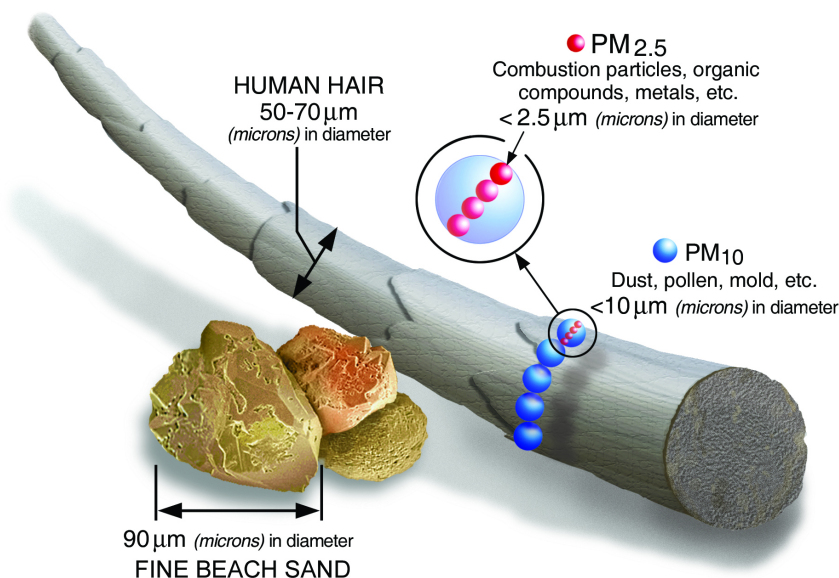


Image from U.S. Environmental Protection Agency

Particulate matter comes from a variety of sources. It comes from all the vehicle exhaust. We need to burn the fuel to drive. However, burning fuel causes exhaust which include plenty of PM10 and PM2.5. In addition, in Australia, bushfires happen every year. When a bushfire happens, it produces an enormous amount of smoke. The big component of smoke is PM2.5. Although bushfires happen far away from us, fine particulate matter (PM2.5) can be carried hundreds of miles away from the events. That is the reason why we can smell the smoke when bushfires happen far away from us.

Particulate matter can cause short term and long term health issues. In the short term, PM2.5 is a stimulator to cause asthma attacks. Asthma attacks are a life threatening condition. 10.7% of Australians have asthma. Bushfire smoke causes 19% of people with asthma history to experience asthma emergencies. Also, according to the California Air Resource Board, if people have been exposed to PM2.5 for a long term (month to years), it has been linked to premature death, heart problems, lung disease and reduced lung function growth in children.

CONCLUSION

In conclusion, air quality has been worsening in the last 20 years. Although we can't stop bushfires, there are things that we can do to improve the air quality.

Firstly, people can use more public transport instead of private cars. Secondly, the governments can encourage companies to use clean energy by reducing their taxes. Finally, people who have asthma should not only carry a puffer, but also need to have N95 masks or normal masks with PM2.5 filter in summer to prevent asthma attacks by bushfire smoke.

Word count: 835

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