



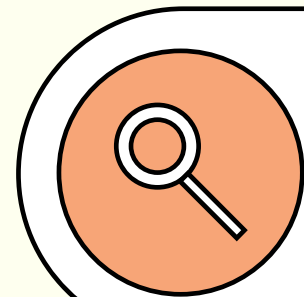
Smart New Campus, Sustainable New Life (智慧新校園，永續新生活)

Causes and Effects of Air Pollution



指導老師:

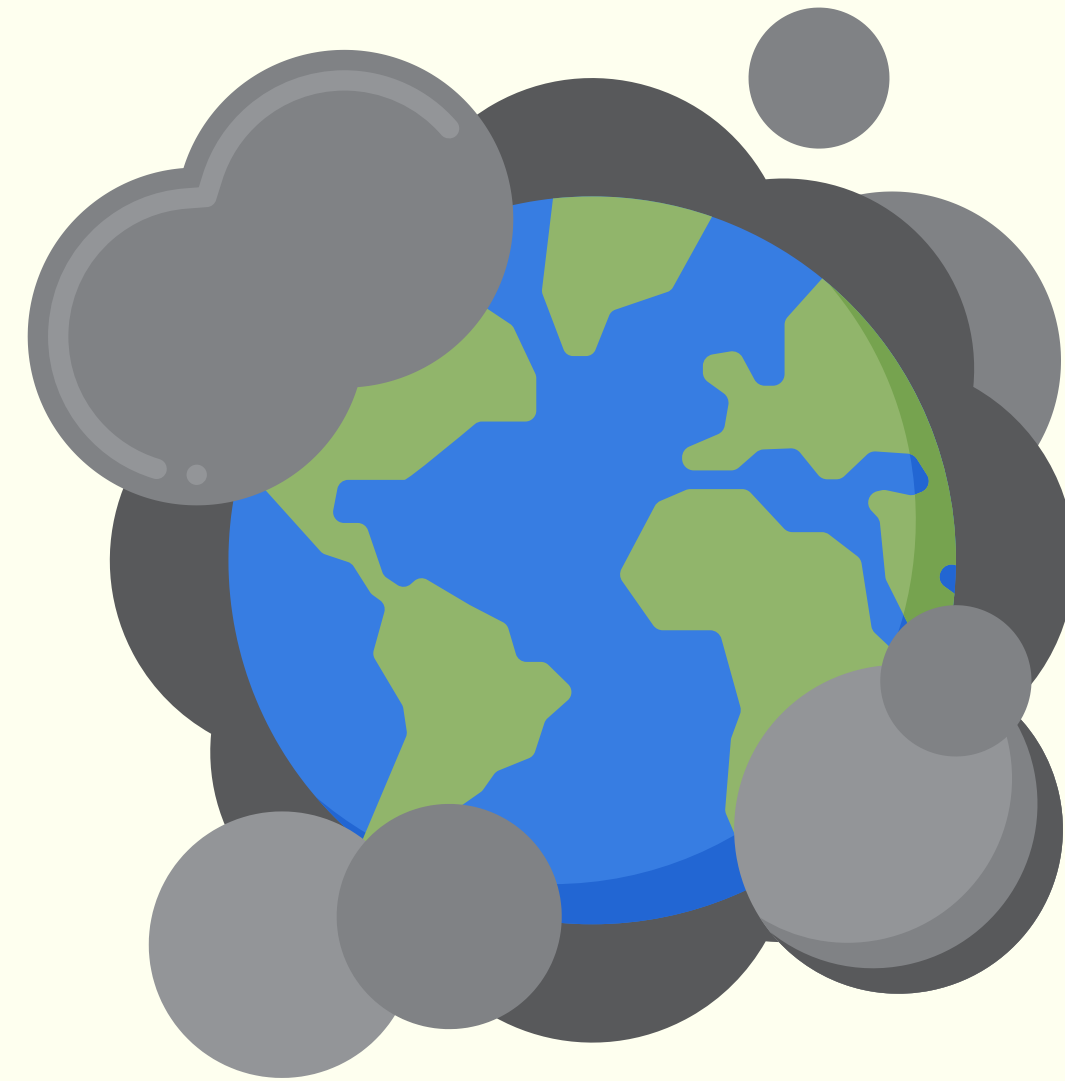
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Table of contents

1. What is air pollution?
2. Causes of air pollution
3. Global examples of air pollution
4. Examples of air pollution in Taiwan
5. Examples of air pollution in Tainan City



1. What is air Pollution?



Air pollution refers to the presence of harmful substances or pollutants in the air, which may come from sources such as industrial emissions, traffic exhaust, agricultural activities, coal burning, etc.



2. Causes of air pollution





2. Causes of air pollution

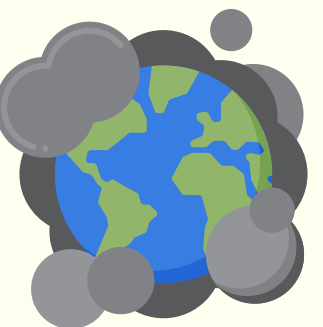
Air pollution is caused by a variety of factors, including:

Energy production: The combustion of energy sources such as coal, oil and natural gas releases large amounts of pollutants.

Agricultural activities: Fertilizers and pesticides used in agricultural activities release ammonia and other chemicals that interact with other air pollutants to form harmful substances such as ozone and fine suspended solids.

Domestic pollution: Domestic and commercial activities also produce air pollution. For example, products that use chemical cleaners, sprays, and other volatile organic compounds (VOCs) can release harmful gases.

Weather conditions: Weather conditions also affect air pollution levels. For example, factors such as wind direction and speed, temperature and humidity may affect the dispersion and accumulation of pollutants in the air.



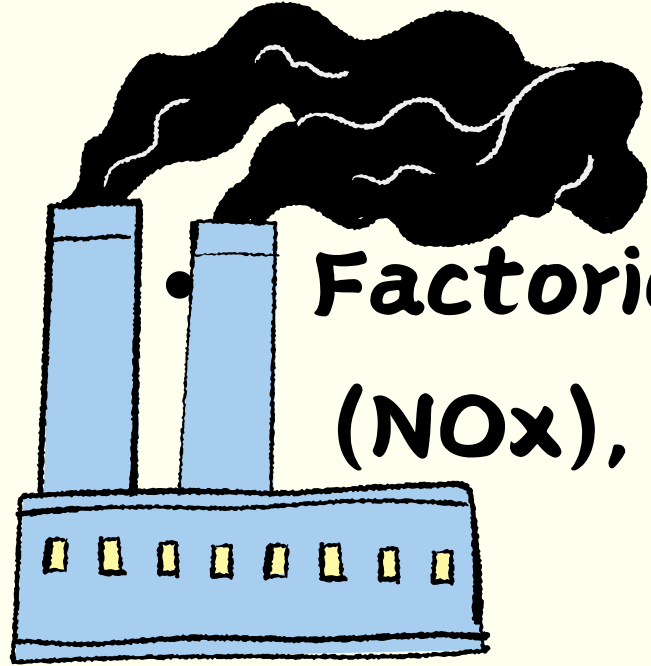
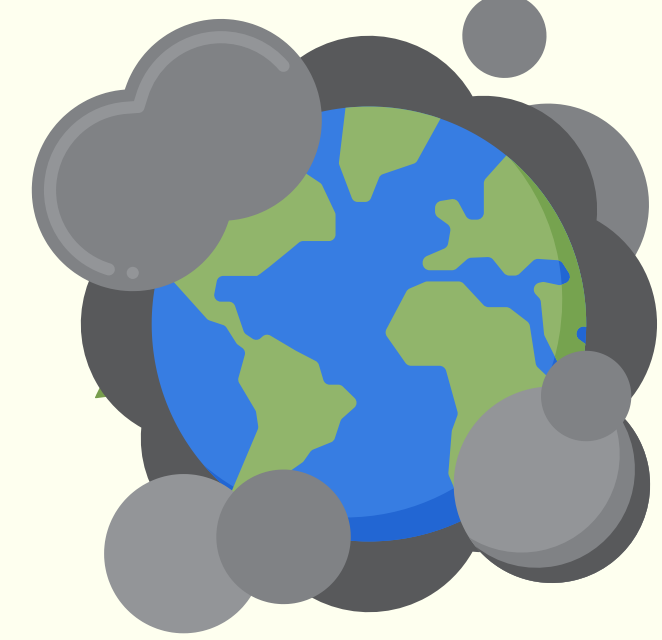
3. Global examples of air pollution

CO₂



3.

Global examples of air pollution



Industrial emissions:

Factories and power plants emit sulfur dioxide (SO₂), nitrogen oxides (NO_x), volatile organic compounds (VOC) and suspended particulates (PM_{2.5} and PM₁₀).

Vehicle emissions:

Carbon dioxide (CO₂), carbon monoxide (CO), nitrogen oxides (NO_x) and hydrocarbons (HC) emitted by internal combustion engine vehicles such as cars, trucks, and motorcycles.

Global transport emissions:

- Global transportation emissions, especially emissions from vehicles such as cars, airplanes and ships, have a significant impact on air quality. These emissions include nitrogen oxide, hydrocarbons, volatile organic compounds and particulate matter.



3. Global examples of air pollution



Agricultural activities:

Ammonia (NH_3), methane (CH_4) and nitrogen oxides (NO_x) are released during farmland fertilization and pesticide spraying.

Smoke and particulate matter released from crop burning.

Construction site:

Large amounts of dust are generated from construction and demolition activities.

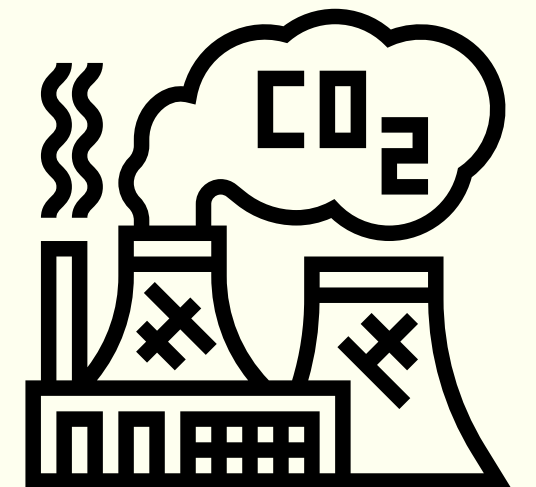
Fine particles released from the use of cement, lime and other materials.

Natural phenomenon:

Sulfur dioxide (SO_2) and ash released by volcanic eruptions.

Dust storms carry large amounts of particulate matter.

Forest fires release large amounts of smoke and toxic gases



4. Examples of air pollution in Taiwan

Taiwan example of air pollution



1. **Industrial pollution:** During the industrialization process in Taiwan, many factories emitted waste gas, chemicals and dust, resulting in deterioration of air quality. Especially cities located in industrial areas, such as Taipei, Kaohsiung and other places, have long faced serious industrial pollution problems.

2. **Traffic emissions:** Vehicle emissions are one of the main sources of urban air pollution in Taiwan. Highly congested urban traffic and the lack of a good mass transportation system cause cars, motorcycles and other vehicles to emit large amounts of exhaust gas, which has a negative impact on air quality.

3. **Industrial waste incineration:** In the past, due to the lack of correct waste treatment methods, some places may incinerate industrial waste. This practice will release harmful gases and pollutants, posing a threat to the air quality of surrounding areas.



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The air pollution problem in Taiwan not only affects the purity of the environment, but also poses a threat to people's health and quality of life. Therefore, we need to deeply understand the root causes of these pollution problems and how to effectively solve them.

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Taiwan's industrialization process is one of the main reasons for worsening pollution problems. Factory emissions and wastewater contain harmful chemicals.

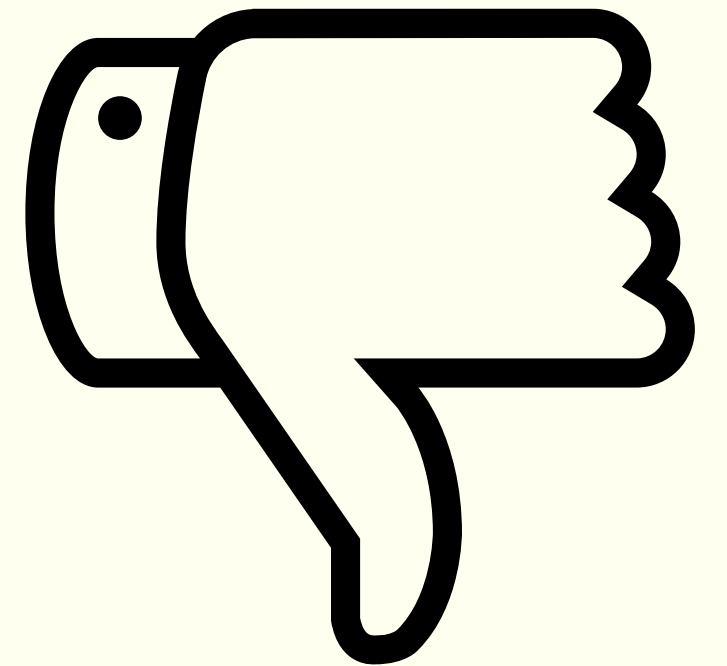
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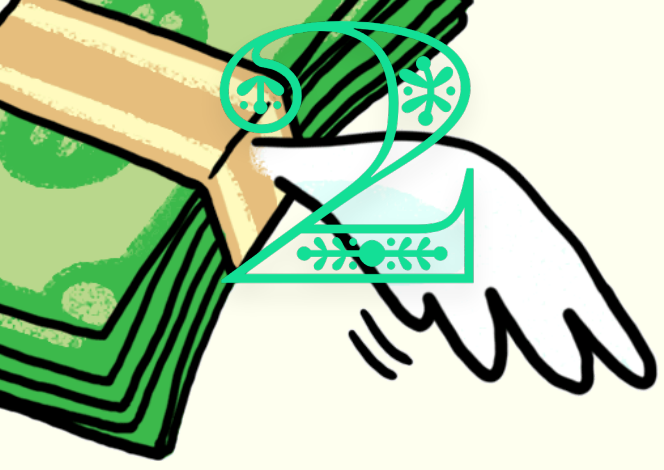
Large amounts of plastic and solid waste have also caused serious pollution to soil and oceans

5. Examples of air pollution in Tainan City

1 *Causes of air pollution in Tainan*

TAINAN'S AIR POLLUTION COMES FROM INDUSTRIAL ACTIVITIES, TRAFFIC EMISSIONS AND AGRICULTURAL ACTIVITIES, AND MUCH MUCH MORE.





Effects of air pollution in Tainan

Health impacts: Poor air quality increases the risk of respiratory disease, cardiovascular problems, and exacerbates existing health conditions such as asthma and allergies.

Environmental degradation: Damage to ecosystems, soil quality and water bodies. Acid rain caused by air pollutants can lead to soil acidification, water pollution and biodiversity loss, posing a long-term threat to ecological balance.

Economic Consequences: The economic costs of air pollution in Tainan are substantial, including medical costs, lost productivity due to illness and absenteeism, damage to crops and natural resources, and much much more.



3 HOW TO SOLVE TAINAN AIR POLLUTION

1. Strict regulations: Implement strict environmental regulations on industry, transportation and agricultural practices to limit pollutant emissions.

2. Promote clean energy: Encourage the use of renewable energy sources such as solar, wind and hydropower

3. Sustainable transport: Invest in public transport infrastructure, promote cycling and walking, and encourage the use of electric vehicles to reduce traffic congestion and vehicle emissions.



**Thank
you**

