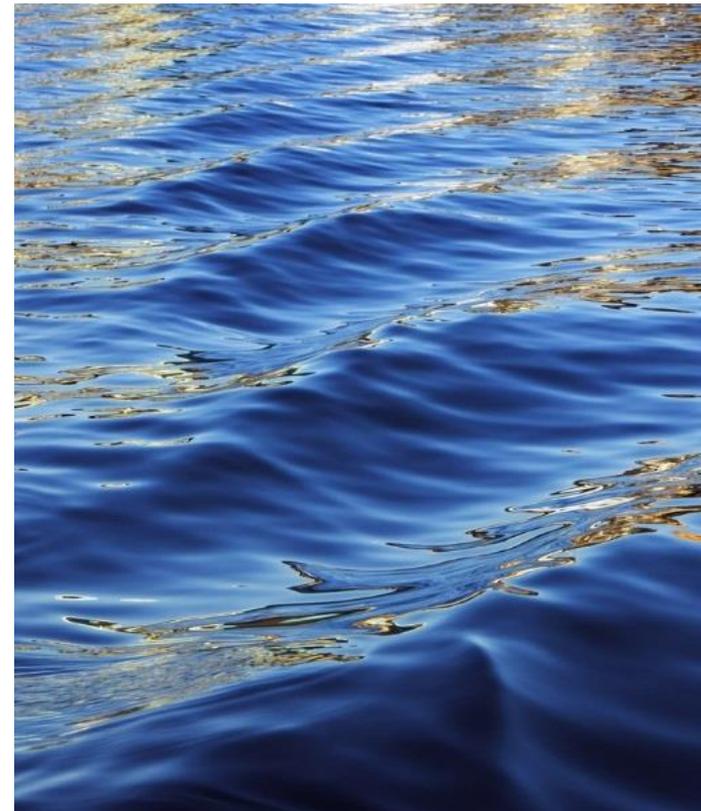




# PEMBANGUNAN BERKELANJUTAN

Pertemuan 10 – Kualitas Udara



**Tim Penyusun MK Pembangunan Berkelanjutan**

# Latar belakang

Kualitas udara di DKI Jakarta memburuk pada tahun 2019 dibandingkan tahun 2018. Prediksi ini berdasarkan pengukuran PM 2,5 atau partikel halus di udara yang berukuran lebih kecil dari 2,5 mikron (mikrometer).

Berdasarkan air quality index (AQI) pada 2018, rata-rata tahunan konsentrasi PM 2,5 adalah 42,42 mikrogram per meter kubik. Sementara, pada 1 Januari-4 Juni 2019, rata-rata konsentrasi PM 2,5 sudah 57,66 mikrogram per meter kubik.

# Definisi

- Air quality is a measure of how clean or polluted the air is. Monitoring air quality is important because polluted air can be bad for our health—and the health of the environment.
- Air quality is measured with the Air Quality Index, or AQI. The AQI works sort of like a thermometer that runs from 0 to 500 degrees. However, instead of showing changes in the temperature, the AQI is a way of showing changes in the amount of pollution in the air.

IQA	Implikasi kesehatan	Pernyataan Kehatihatian	
0 - 50	Baik	Kualitas udara dianggap memuaskan, dan polusi udara menimbulkan sedikit atau tanpa risiko	Tidak ada
50 - 100	Moderat	Kualitas udara dapat diterima; Namun, untuk beberapa polutan mungkin ada kekhawatiran kesehatan yang moderat untuk sejumlah kecil orang yang sangat sensitif terhadap polusi udara.	Anak-anak yang aktif dan orang dewasa, dan orang-orang dengan penyakit pernapasan, seperti asma, harus membatasi aktivitas luar ruangan yang berkepanjangan.
100 - 150	Tidak Sehat untuk kelompok orang yang sensitif	Anggota kelompok sensitif dapat mengalami efek kesehatan. Masyarakat umum tidak mungkin terpengaruh.	Anak-anak yang aktif dan orang dewasa, dan orang-orang dengan penyakit pernapasan, seperti asma, harus membatasi aktivitas luar ruangan yang berkepanjangan.
150 - 200	Tidak sehat	Setiap orang mungkin mulai mengalami efek kesehatan; anggota kelompok sensitif dapat mengalami efek kesehatan yang lebih serius	Anak-anak yang aktif dan orang dewasa, dan orang-orang dengan penyakit pernapasan, seperti asma, harus menghindari aktivitas luar ruangan yang berkepanjangan; semua orang, terutama anak-anak, harus membatasi aktivitas luar ruangan yang berkepanjangan
200 - 300	Sangat Tidak Sehat	Peringatan kesehatan untuk kondisi darurat. Seluruh penduduk lebih mungkin terpengaruh.	Anak-anak dan orang dewasa yang aktif, dan orang-orang yang memiliki penyakit gangguan pernapasan, seperti asma, harus menghindari aktivitas luar ruangan; selain kelompok di atas, terutama anak-anak, harus membatasi aktivitas luar ruangan.
300 - 500	Berbahaya	Peringatan kesehatan: semua orang mungkin mengalami efek kesehatan yang lebih serius	Setiap orang harus menghindari semua aktivitas luar ruangan

## When is air quality bad enough that you should stay inside?

- An AQI under 50 means that the air quality is good. At this low AQI level, a person can spend time outdoors and air pollution will pose very little risk to their health. As the AQI number increases, so does the risk to human health. (See the chart below for a summary of the AQI levels of health concern.)



## What is Particle Air Pollution?

- Particulate matter (PM), also called particle pollution, is a general term for extremely small particles and liquid droplets in the atmosphere
- PM<sub>2.5</sub> (fine particles):  $d \leq 2.5 \mu\text{m}$
- PM<sub>10</sub> (coarse particles):  $d \leq 10 \mu\text{m}$
- Primary sources: – Incomplete combustion – Automobile emissions – Dust – Cooking
- Secondary sources: – Chemical reactions in the atmosphere



Wood-Burning Stoves



Forest Fires



Diesel Engines

Natural Sources



Cars and Buses



**There are many sources  
of particle pollution**

Non-Road Vehicles

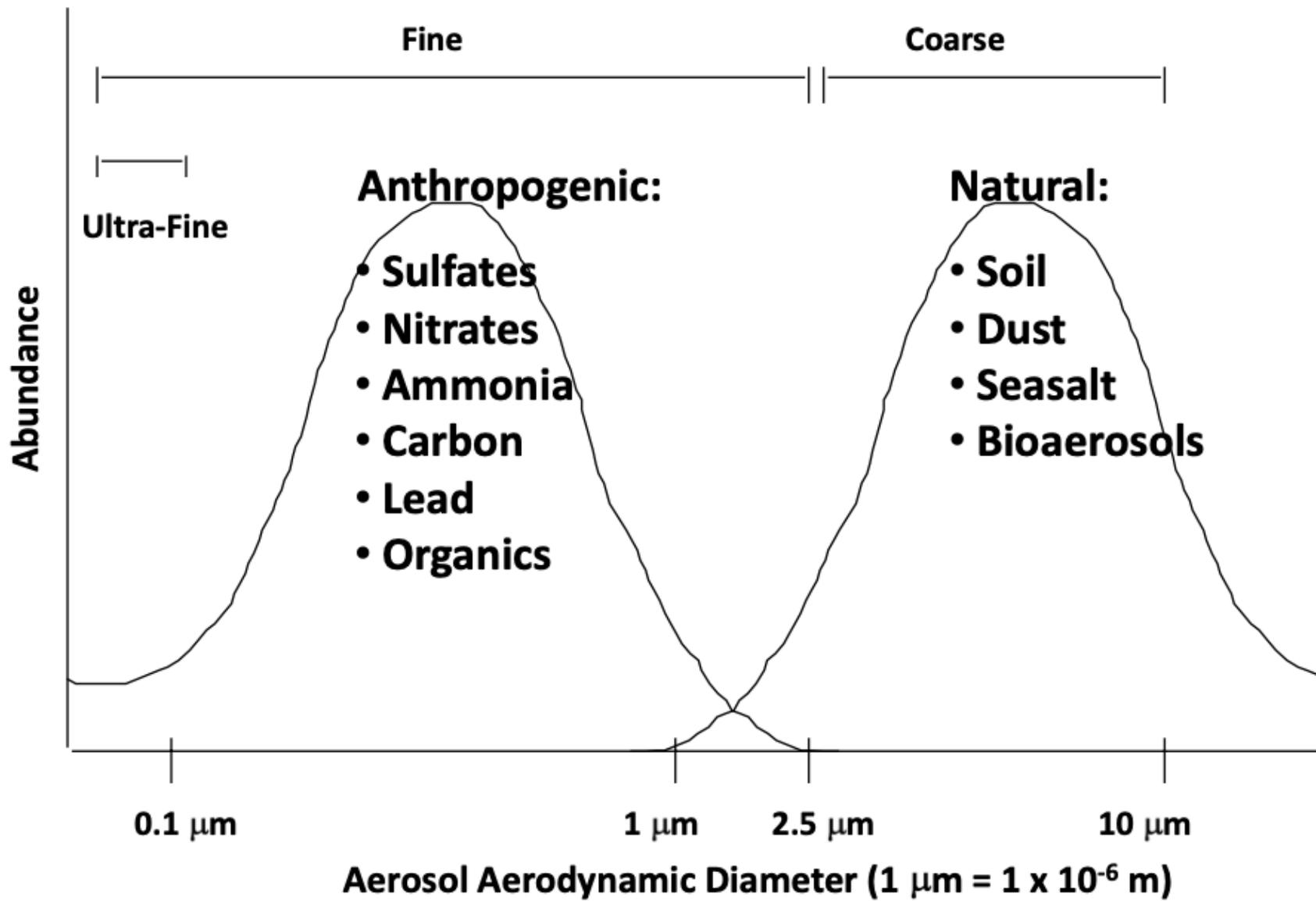


Agricultural Burning



Industry





# Sizes and Composition of Particulate Matter

# Why Is it Important to Communicate Information about Particle Pollution to the Public?



Exposure to particle pollution is a public health hazard



- When inhaled, particle pollution can travel deep into the lungs and cause or aggravate heart and lung diseases



- Exposure to particle pollution causes increases in: – Doctor and emergency room visits – Hospital admissions – Use of prescription medication – Absences from work and school

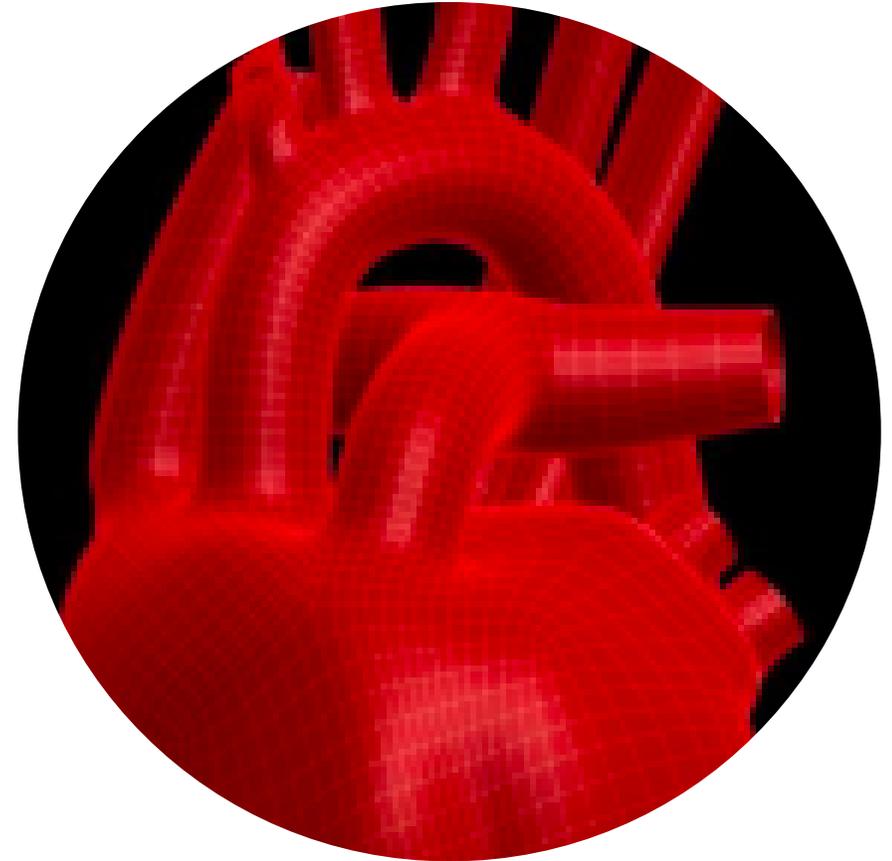


## Particle Pollution Affects the Lungs

- People are exposed to particle pollution when they breathe
- Effects of short-term (acute) exposure:
  - Coughing – Shortness of breath – Tightness of the chest – Irritation of the eyes
- Effects of long-term (chronic) exposure:
  - Reduced lung function – Development of respiratory diseases in children – Aggravation of existing lung diseases – Premature death of people with lung disease

# Particle Pollution Affects the Heart

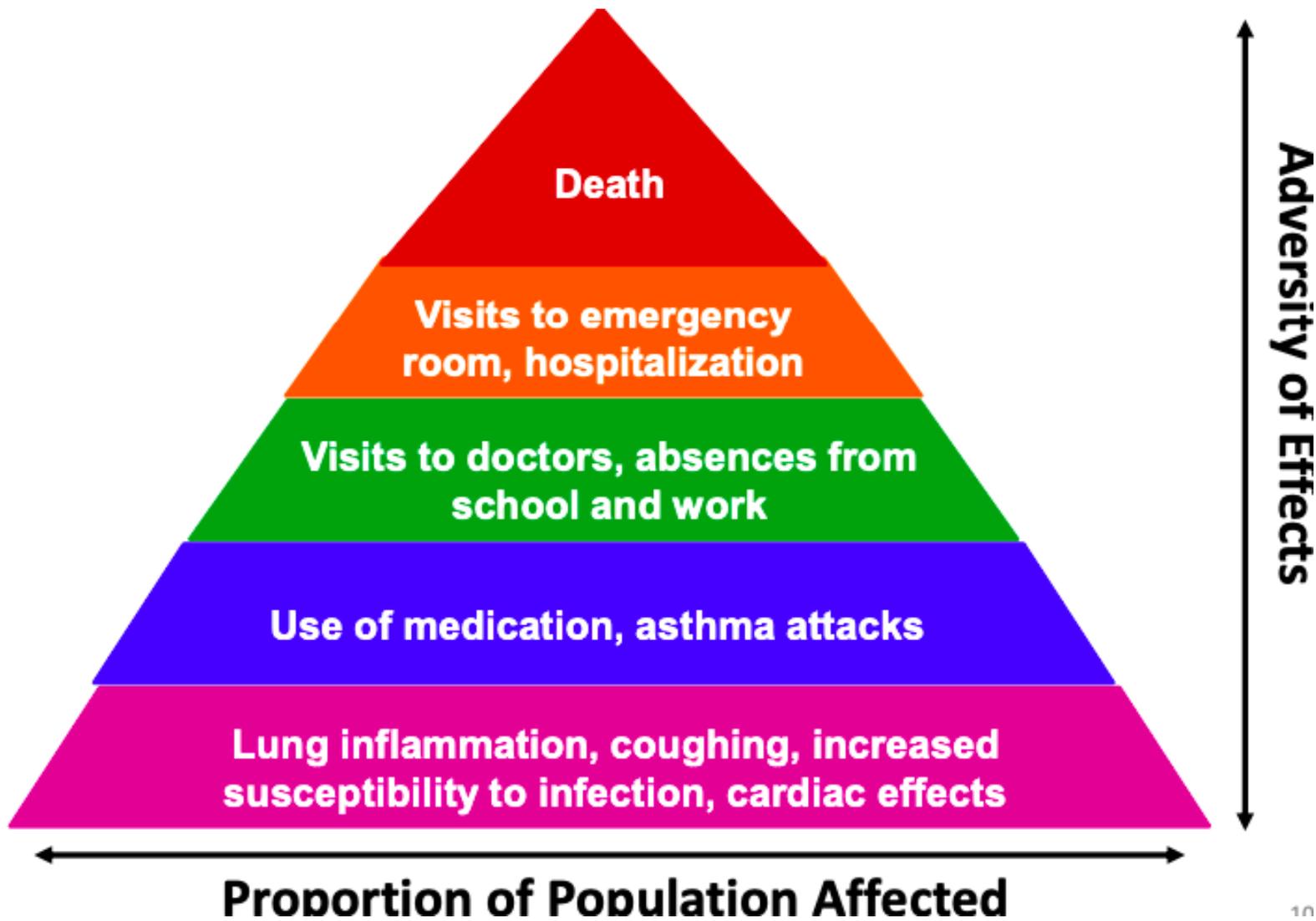
- Inhaled particles can pass from the lungs into the bloodstream and affect the cardiovascular system
- Effects of short-term (acute) exposure:
  - Irregular heartbeat – Nonfatal heart attacks
- Effects of long-term (chronic) exposure:
  - Aggravation of existing heart diseases – Premature death of people with heart disease



- Children – Lungs are still developing – Spend more time at high activity levels
- Senior citizens – May have undiagnosed heart or lung diseases
- People with existing heart or lung diseases – Particle pollution aggravates these diseases
- People who exercise or work outdoors – Breathe faster and deeper than sedentary adults

## Certain Groups Are Most at Risk from Exposure to Particle Pollution





Pyramid of Health Effects from Air Pollution

# Communicating health effects

- Morbidity – Increased frequency of chronic bronchitis, respiratory hospital admissions, restricted activity days, etc.
- Disability-Adjusted Life Year (DALY) – Indicates how a disease can alter the ability of people to live a normal life compared to those with no disease – Expresses years of lost life
- Mortality (number of deaths)

# Kesimpulan

Particulate matter (PM) is a general term for very small solid and liquid particles in the atmosphere

- There are many different sources of PM, including natural and anthropogenic (man-made) sources
- PM is hazardous to human health – it causes acute and chronic effects to the respiratory and cardiovascular systems
- PM causes a variety of human health and economic impacts each year (e.g., mortality, morbidity, DALYs, lost income from work absences, costs of health care)

# Tugas

Lihat file "RTM-CPS201-Tugas 2 (a)"



Terima kasih

