

# 國立臺北大學自然資源與環境管理研究所

## 113 學年度第一學期『環境工程科學概論』

### 課程講義(12)：空氣污染概論 Introduction to Air Pollution

- INTRODUCTION AND SOME HISTORIC REMARKS
  - Ambient Air Quality (Primary and Secondary) vs. Emission Source Control
  - Gaseous and Particulate Pollutants => Primary vs. Secondary Pollutants
  - Episodes of Air Pollution and Historical Disasters => Alert and Restriction
  - Coase Theorem and Bubble Theory (Model) => Cap-and-Trade (ETS)
  - Fine Particulate Matter, Visibility, Health Impacts, and Long-range Transport
- CRITERIA POLLUTANTS AND [AIR QUALITY STANDARDS \(2024.09.30 修正\)](#)
  - Carbon monoxide CO: CO-Hb => CO<sub>2</sub> => Indoor Air Quality
  - Oxides of Nitrogen NO<sub>x</sub>; Oxides of Sulfur SO<sub>x</sub> => Acidic Deposition
  - Photochemical Smog and Ozone => PAN (Peroxyacetyl Nitrate) and O<sub>3</sub>
  - Particulate Matter PM (TSP, PM<sub>10</sub> and PM<sub>2.5</sub>) and Lead => Aerosol
  - Volatile Organic Compounds (VOCs) and Polycyclic Aromatic Hydrocarbon
- AIR QUALITY MANAGEMENT
  - Planning for Air Quality Management 空氣品質保護規劃
    - ⇒ [Air Quality Index \(AQI\)](#) vs. Pollutant Standard Index (PSI)
    - ⇒ Zoning and Control Strategies: Non-Attainment Area [空氣污染防制區](#)
    - ⇒ [臺灣空氣污染物排放量清冊 Taiwan Emission Data System \(TEDS\)](#)
    - ⇒ [空氣污染防制方案](#) => State Implementation Plan (SIP) [空氣污染防制計畫](#)
    - ⇒ [空氣品質嚴重惡化警告發布及緊急防制辦法](#) => [空氣品質嚴重惡化預警資訊](#)
  - Command-and-Control vs. Economic Incentives => Levy; Cap-and-Trade
    - ⇒ Emission Trading: Conventional Air Pollutants and Greenhouse Gases...
- CONTROL MEASURES FOR EMISSION SOURCES
  - Control Measures for Emission Sources
    - ⇒ Emission Standards vs. Fuel Standards; Gasoline Engines vs. Diesel Engines
    - ⇒ Exhaust System Controls => Catalytic Converter (Precious Metals)
    - ⇒ Alternative Fuels, Hybrid Vehicles, and Electric Automobiles => Tag Control?
  - Control Measures for Stationary Sources
    - ⇒ Control Strategies: Combustion, and Pre- or Post-Combustion Controls
    - ⇒ Pollution Control Devices: Gaseous and Particulate Pollutants  
Scrubber (Cyclone), Bag-house, Electrostatic Precipitator (EP), FGD, SCR, SNCR...
- INDOOR AIR QUALITY
  - Tobacco Smoke, Asbestos, Radon, Formaldehyde, Mold, and Microorganisms
  - [室內空氣品質資訊網](#)
- HOMEWORK ASSIGNMENT #7 (2024/12/17 Due): 請製表比較空氣品質標準之新舊規定，並討論新標準衍生空氣品質良好日數百分比下降之解讀方式。