

國立臺北大學自然資源與環境管理研究所  
107 學年度第一學期『環境工程科學概論』

課程講義(13)：空氣污染概論  
Introduction to Air Pollution

- INTRODUCTION AND SOME HISTORIC REMARKS
  - Ambient Air Quality vs. Emission Source Control => Bubble Theory
  - Gaseous and Particulate Pollutants => Green House Gases
  - Episodes of Air Pollution and Historical Disasters => Alert and Restriction
  - Fine Particulate Matter, Visibility, Health Impacts, and Long Range Transport
- CRITERIA POLLUTANTS AND AIR QUALITY STANDARDS
  - Carbon monoxide CO: CO-Hb => CO<sub>2</sub>
  - Oxides of Nitrogen NO<sub>x</sub>; Oxides of Sulfur SO<sub>x</sub>
  - Photochemical Smog and Ozone => PAN (Peroxyacetyl Nitrate) and O<sub>3</sub>
  - Particulate Matter PM (TSP, M<sub>10</sub> and PM<sub>2.5</sub>) and Lead
  - Air Quality Index (AQI) vs. Pollutant Standard Index (PSI)
  - Volatile Organic Compounds (VOCs) and Polycyclic Aromatic Hydrocarbon
- AIR QUALITY MANAGEMENT
  - Zoning and Control Strategies: Non-Attainment Area 空氣污防制區
  - State Implementation Plan (SIP) => 縣市空氣品質改善維護計畫
  - Command-and-Control vs. Economic Incentives => Total Emission Control
- MOBILE 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?
  - Mass Transit Systems => BRT? Light Rail? Cable Car? => Sharing Economy
- STATIONARY SOURCES
  - Control Strategies: Combustion, and Pre- or Post-Combustion Controls
  - Pollution Control Devices: Gaseous and Particulate Pollutants  
=> Scrubber, Bag-house, Electrostatic Precipitator (EP), FGD, SCR, SNCR...
  - Emission Trading: Conventional Pollutants and Greenhouse Gases
- INDOOR AIR QUALITY
  - Tobacco Smoke, Asbestos, Radon, Formaldehyde, Mold, and Microorganisms.
  - Indoor Air Quality Standard => Sick Building Syndrome => Announced Premise
- HOMEWORK ASSIGNMENT #8 (併入期末報告之個人報告)：PSI vs. AQI