

國立臺北大學自然資源與環境管理研究所

114 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 (Outdoor) Air Quality (Primary and Secondary) vs. Emission Sources
 - 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 => CO₂ => Indoor Air Quality
 - Oxides of Nitrogen NO_x; Oxides of Sulfur SO_x => Acidic Deposition
 - Photochemical Smog and Ozone => PAN (Peroxyacetyl Nitrate) and O₃
 - Particulate Matter PM (TSP, PM₁₀ and PM_{2.5}) 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 GHG ([GHG 空氣污染物?](#))
- 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 (2025/12/16 Due): 請以阿拉伯數字製表比較空氣品質標準及空氣品質指標 AQI 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（涉及 Attainment--空氣污染防制區劃設）。