

國立臺北大學自然資源與環境管理研究所

111 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 vs. Emission Source Control => Bubble Theory
 - Gaseous and Particulate Pollutants => Primary vs. Secondary Pollutants
 - 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 => 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, M₁₀ and PM_{2.5}) and Lead
 - Volatile Organic Compounds (VOCs) and Polycyclic Aromatic Hydrocarbon
- 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](#)
 - Command-and-Control vs. Economic Incentives => Levy; Cap-and-Trade
 - ⇒ Emission Trading: Conventional Air Pollutants and Greenhouse Gases...
- 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...
- INDOOR AIR QUALITY
 - Tobacco Smoke, Asbestos, Radon, Formaldehyde, Mold, and Microorganisms
 - Indoor Air Quality Standard => Sick Building Syndrome => Announced Premise
- HOMEWORK ASSIGNMENT #7 (自行搜尋閱讀)：AQI、PM_{2.5}、心血管疾病