

國立臺北大學自然資源與環境管理研究所

100 學年度第一學期『環境工程科學概論』

課程講義(十四)：空氣污染概論

- INTRODUCTION AND SOME HISTORIC REMARKS
 - Ambient Air Quality vs. Emission Source Control
 - Gaseous and Particulate Pollutants
 - Episodes of Air Pollution and Historical Disasters
- CRITERIA POLLUTANTS AND AIR QUALITY STANDARDS
 - Carbon monoxide CO: CO-Hb
 - Oxides of Nitrogen NO_x; Oxides of Sulfur SO_x
 - Photochemical Smog and Ozone => PAN (Peroxyacetyl Nitrate) and O₃
 - Particulate Matter PM (PM₁₀ and PM_{2.5}) and Lead
 - Volatile Organic Compounds (VOCs)
 - Toxic Air Pollutants (Air Toxins or Hazard Air Pollutants, HAPs)
 - Air Quality Standards: National Ambient Air Quality Standards (NAAQS)
 - Air Quality Index (AQI) vs. Pollutant Standard Index (PSI)
- AIR QUALITY MANAGEMENT
 - Zoning and Control Strategies: Non-Attainment Area 空氣污防制區
 - State Implementation Plan (SIP)
 - Command-and-Control vs. Economic Incentives
- MOBILE EMISSION SOURCES
 - Emission Standards vs. Fuel Standards; Gasoline Engines vs. Diesel Engines
 - Exhaust System Controls => Catalytic Converter (Precious Metals)
 - Alternative Fuels and Hybrid Vehicles
 - ⇒ Electric Scooters and (Plug-in) Hybrid Electric Vehicles (P-HEV)
 - ⇒ CNG Bus and LPG Taxi; Fuel Cell and Fuel Cell Cars
- 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, and Mold.