

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(10)：淨水與廢水處理技術 Water Purification and Wastewater Treatment Technology

● SELECTED REVIEW

- Public Water Supply, Sewage Systems, Industrial Wastewater, Water Reuse
 - ⇒ 飲用水水質標準、自來水水質標準、再生水水質標準及使用遵行辦法
 - ⇒ Water Reclamation and Water Reuse ⇒ 再生水資源發展條例
 - ⇒ 開發單位使用再生水辦法 ⇒ 溫室氣體 空氣污染物 園區事業廢棄物
 - ⇒ 板新地區供水改善工程計畫、翡翠原水管工程計畫
- 水源保護區劃設、管理、回饋 ⇒ 自來水法、飲用水管理條例
- 水質淨化現地處理；水質淨化工程篇；水質自然淨化工法
- LID ⇒ 生態工法 vs. 以自然為本的解決方案 Nature-based Solutions (NBS)

● WATER SUPPLY ENGINEERING

- 自來水到我家：取水、導水、淨水、送(配)水
- 自來水工程、給水工程、上水道工程：原水、清水
- Water Treatment Units
 - ⇒ Gas Transfer; Ion Transfer; Solid Transfer
 - ⇒ Solute Stabilization ⇒ Desalination
 - ⇒ Sanitation, Hygiene and Aesthetical Considerations (Potability 適飲性)
- Water Treatment Components (Steps)
 - ⇒ Gridding and Screening
 - ⇒ Coagulation (混凝) and Flocculation (膠凝) ⇒ PAC
 - ⇒ Sedimentation ⇒ Primary and Secondary (even Tertiary sedimentation)
 - ⇒ Filtration and Disinfection ⇒ THM (Tri-Halogen Methane)
- Advanced Water Treatment: Potability and other Aesthetical Considerations
 - ⇒ Ion Exchange; Reverse Osmosis (RO); Ultra-filtration: Membrane; UV & O₃

● SEWAGE ENGINEERING AND WASTEWATER TREATMENT ENGINEERING

- Sewage Systems or Sewers: Sanitary Wastewater and Stormwater Runoff
 - ⇒ Combined vs. Separate Sewage Systems
 - ⇒ Pipelines vs. Channels: Pipe Flow vs. Open Channel (Open Surface) Flow
- Classification of Wastewater Treatment Plants
 - ⇒ Primary Treatment 一級處理
 - ⇒ Secondary (Biological) Treatment 二級 (生物) 處理
 - ⇒ Tertiary (Advanced) Treatment 三級 (高級) 處理
- Sludge Treatment
 - ⇒ Anaerobic Digestion; Dewatering and Drying ⇒ Water Content; Disposal
 - ⇒ Sludge and Biomass: Integrated Wastewater Treatment Plant
- 「製程用水 100%全回收」(友達龍潭廠) ⇒ 零排放？九年扭轉汙染黑歷史