

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

課程講義(10)：土壤與地下水污染概要
Introduction to Soil and Groundwater Contamination

● GROUNDWATER CONTAMINATION

- Groundwater: the water that flows or stays under the surface of the land
指流動或停滯於地面以下之水
- Porous Media – Solid Matrix, Pore, and Multiple-Phase Fluids
⇒ Porosity vs. Permeability; Hydraulic Conductivity
- Groundwater Pressure and Piezometric Heads
⇒ Unsaturated Zone or Vadose Zone => Soil Layer(?)
⇒ Saturated Zone and Aquifers => Confined and Unconfined Aquifers
⇒ Hydraulic Gradient => Water Table, Hydraulic Head, Flowing Artesian Wells
- Darcy's Law: The Theory Governing Fluid Flow in Porous Media
⇒ [A brief historic remark](#): Henry Darcy, Les Fontaines Publiques de la Ville de Dijon (1856).
- Groundwater Contaminant Transport
⇒ Diffusion and Dispersion: Plume
⇒ Retardation: Adsorption (Absorption)
- Groundwater Contaminants
⇒ Contaminants vs. pollutants; contamination vs. Pollution
⇒ NAPL (Non-Aqueous Phase Liquid): DNAPL and LNAPL
- Groundwater as a Source of Water Supply
⇒ Drawdown and Cone of Depression; Capture Zone; Well Head Protection Area
- Remediation Technologies
⇒ Hydraulic Control; Pump-and-Treat
⇒ Soil Vapor Extraction
⇒ In-Situ Bioremediation; Permeable Reactive Barriers
⇒ Managed Natural Attenuation

● SOIL CONTAMINATION

- Contamination in the Unsaturated Zone
- Reaction with the Saturated Zone and Ground Surface
- [土壤及地下水污染整治法](#)
- 污染場址：控制場址、整治場址、使用限制地區=>監測標準、管制標準
- 場址類別：農地、加油站及儲槽、非法棄置場址、工廠