

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(11)：土壤與地下水污染概要

Introduction to Soil Contamination and Groundwater Pollution

● GROUNDWATER CONTAMINATION / POLLUTION

- 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 孔隙率、透水性
- Groundwater Pressure and Piezometric Heads (§7-3~§7-5)
⇒ Unsaturated Zone / Vadose Zone / Zone of Aeration => Soil Layer (?)未飽和層
⇒ Saturated Zone and Aquifers => Confined and Unconfined Aquifers 含水層
⇒ 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).
⇒ [地下水之流動](#) => 地下水流動極慢：平均每天只有約 1~2m
- Groundwater Contaminants and Pollution Transport
⇒ Contaminants vs. pollutants; contamination vs. Pollution
⇒ Diffusion and Dispersion: Plume; Retardation: Adsorption (Absorption)
⇒ 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 => [地下水與土壤污染整治\(預防\)技術](#)
⇒ Hydraulic Control; Pump-and-Treat; Soil Vapor Extraction
⇒ In-Situ Bioremediation; Permeable Reactive Barriers
⇒ Managed Natural Attenuation or Monitored 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](#) => [概述](#)
- 污染場址：控制場址、整治場址、污染管制區=>監測標準、管制標準
⇒ [污染場址判定流程](#)
⇒ [土壤及地下水污染物](#)及其監測、管制標準
- 場址類別：農地、加油站、儲槽、工廠、非法棄置場址、其他
⇒ [場址查詢](#) => [土壤及地下水技術認證制度推動資訊平台](#)
- [土壤及地下水污染場址健康風險評估](#) => [摺頁](#) [手冊 1](#) [手冊 2](#)
- Reclamation of Contaminated Land => Renewable Energy Development
⇒ [受污染土地設置太陽光電](#) => [漁電共生環境與社會檢核](#)
⇒ [太陽光電環評](#)(立法院關係文書) [中央社報導](#) / [再生能源開發環評](#)