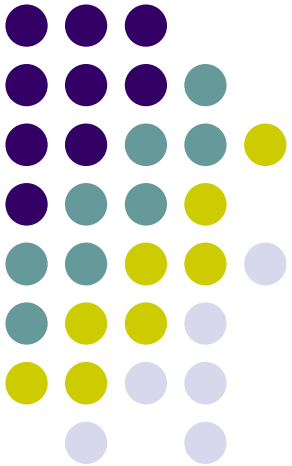
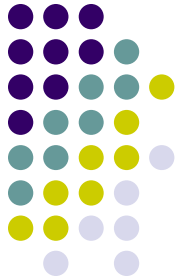
Analysis of Solid

Method of Sampling and extraction of solid





• Solid samples

1. Animal and plant specimens

-directly related with toxic compounds, can be used as indicator to monitor pollutants

2. Soils

3. Sediments and sewage sludge

- Pollutants tend to accumulate, particle size affects the adsorption, mobility and etc

4. Atmospheric particulate

• sampling

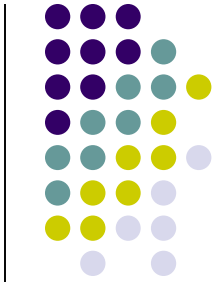
- Sample ; Variation, inhomogeneity
  - Sampling position ; grid, depends on objects
  - Control samples

• Pretreatment ; washing, drying, grinding/homogenisation

• Extraction of the analyte

• Analytical determination

• Analysis of biological samples



-Sampling ;

Plant ; foliage (sampling height), 500~1000g, store under refrigeration

- Pretreatment

Washing ; may extract the analytes

Drying and homogenisation ; below 50oC, easy to make homogenisation, prevent biological activity

- Extraction for organics

Simple method ; add solvent and shake and leave the two phase for several hours

Soxhlet extraction ;

normally hexane or light petroleum used for solvent for a dried sample

wet sample ; sodium sulfate, add polar solvent (ex; acetone)

- Ashing and dissolution for trace metals

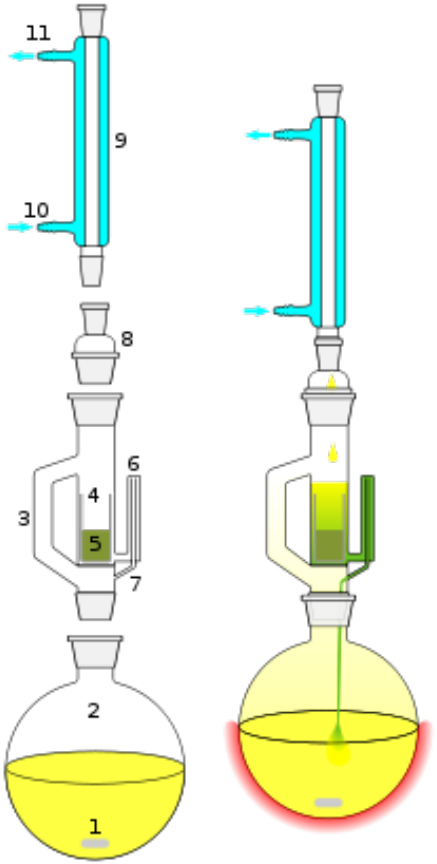
Dry ashing ; heat samples at 400 ~600oC for 12~15h, Decomposition of OM

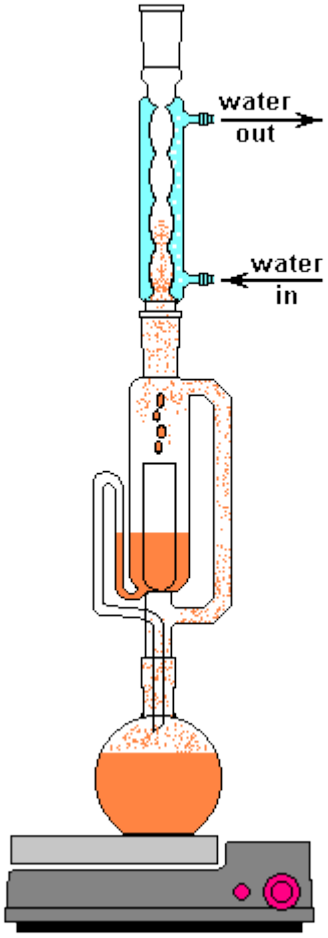
Remaining ash is dissolved in dilute acid and extract metal

Wet ashing ; heat samples with oxidizing agents to break down OM

lower loss from volatilization, higher metal blank from impurities in the acids

great care

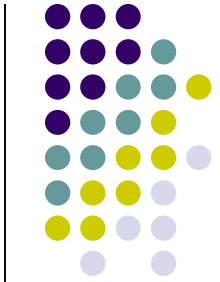




https://en.wikipedia.org/wiki/Soxhlet_extractor

- **Analysis of Animal Tissues**

-Preserve below 0^{o}C,
-Extract without drying the sample
-Alkaline digestion stage ; break down any fatty tissue
-Metals ; wet or drying ashing



• Specific consideration for the soil samples

- Heterogeneity of soil sample ; # of samples, location, depth etc
- Microbial activity, normally drying under room T for not less than 24h
- Grinding (mortal and pestle, sieve etc)
- Subsampling ; cone and quartering technique

-Determination of pH ; pH of water in equilibrium with that soil
any change of condition can alter the equilibrium and pH

• Specific consideration for the sediment samples

- Core sampler and grab sampler
- High water content.
- Organics ; use wet samples, metals ; oven dried at 110^{o}C

• Sewage sludge

-High water content, similar to sediment,
-High organic content, so digestion is necessary

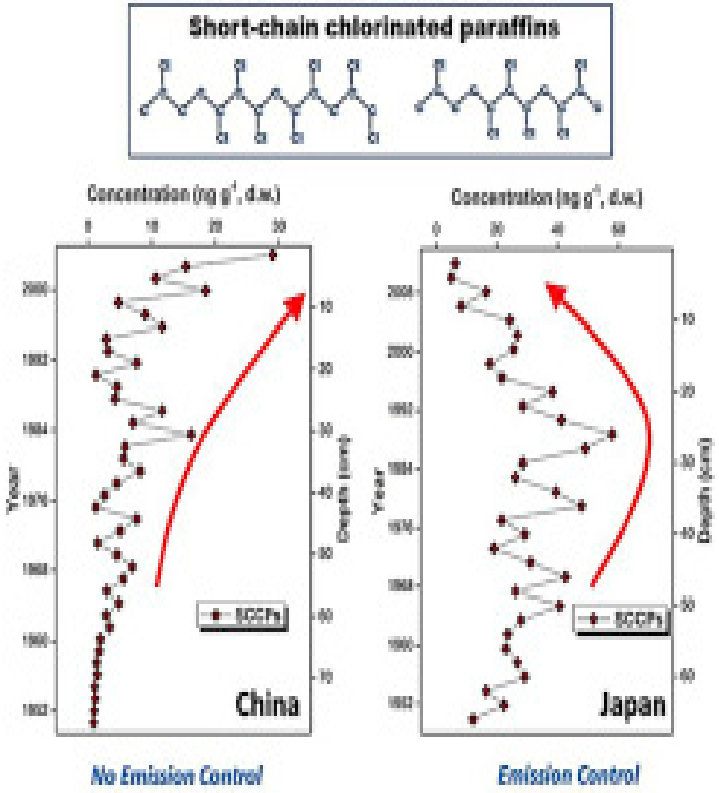
Core sampler

제품개요

* 부유하는 sediment를 유실없이 불교란으로 채취하는 장비
* 수심 최대 5m까지 적용가능
* 압축공기 이용 ⇒ 채취한 시료의 유실 없음.
* 장비가 가볍고, 사용이 간편.

제품사양

* 최대샘플링깊이 : 5m
* 튜브 길이 : 1, 1.5m
* 샘플링 양 : 1.2 ~ 3.6 L
* 재질 : Stainless steel



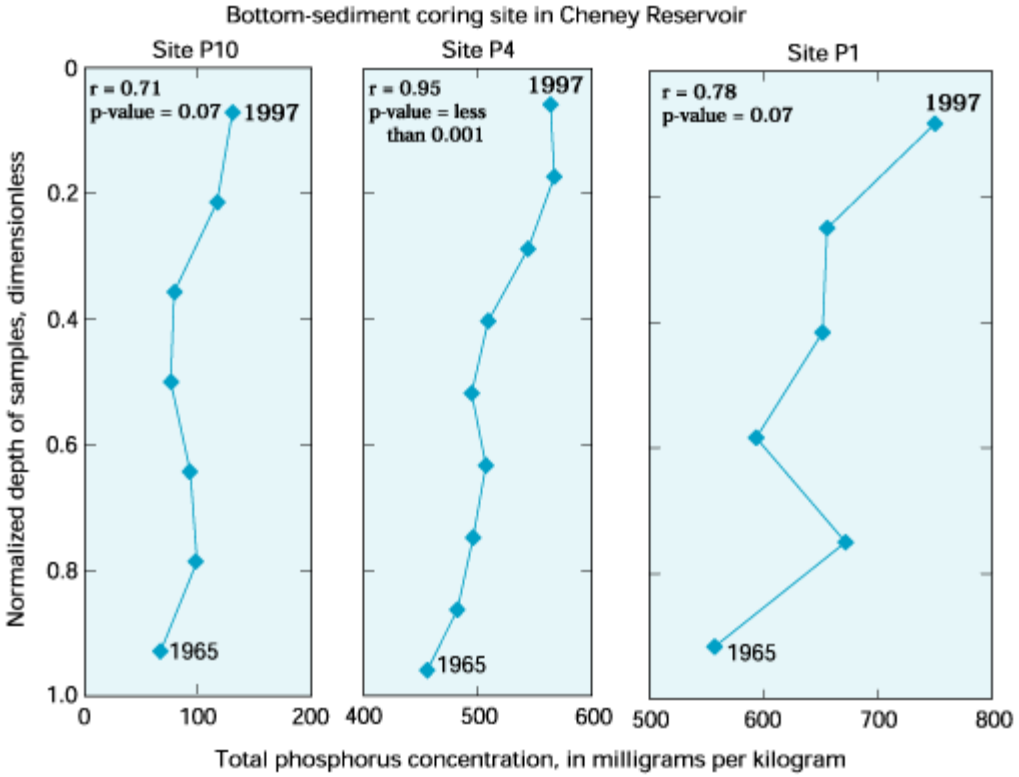


Figure 6. Graphs showing relation between total phosphorus concentrations in bottom-sediment core samples and normalized depth of samples from selected coring sites in Cheney Reservoir, 1965-97