

# Chemical Analysis



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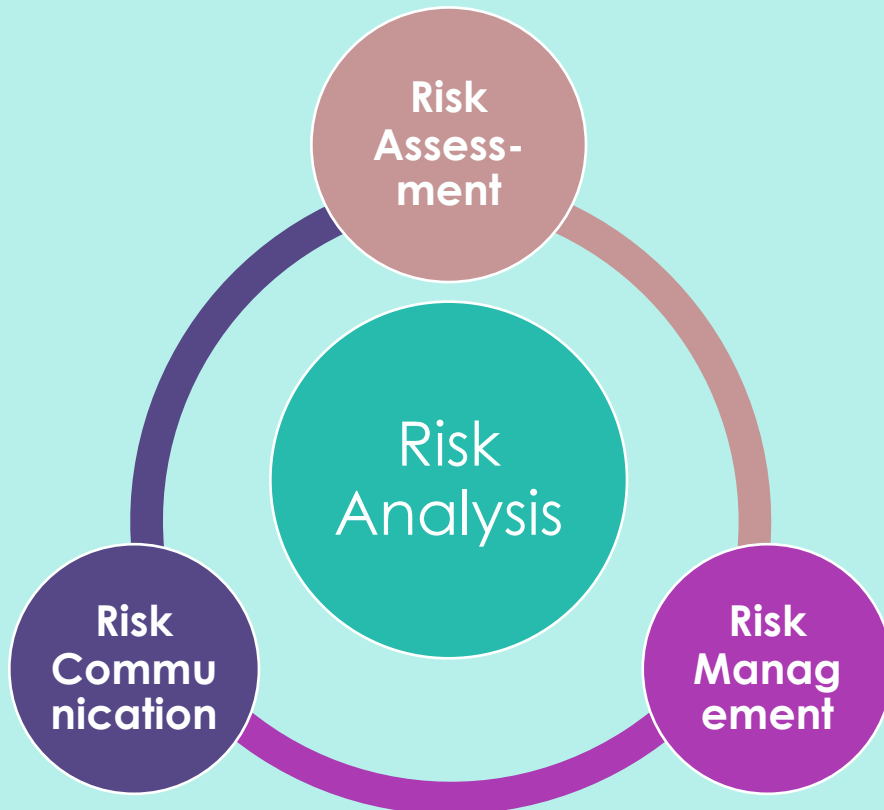
2024/7/31 JSC2024

HOKKAIDO UNIVERSITY, JAPAN

# Environmental Health

July 31<sup>st</sup>-Aug 1<sup>st</sup> Lecture on Environmental Toxicology  
& Lab experience on Chemical Analysis

Risk analysis and lifecycle management



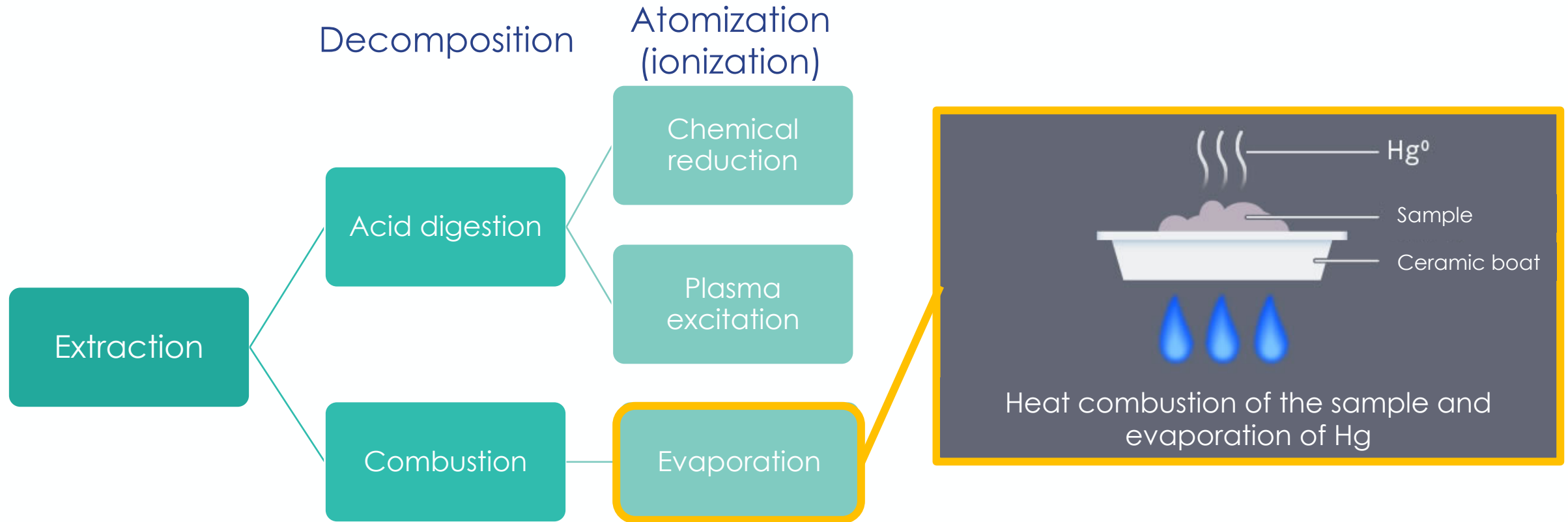
What is Risk?

**Target 1**  
**Pollution Effects on Health**

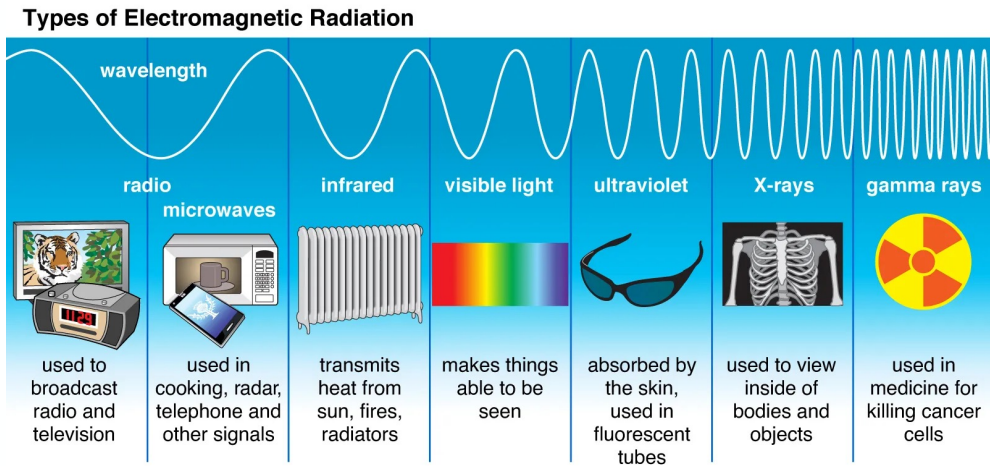
Potential harm  
Risk = Hazard x Exposure  
Likelihood of occurrence

**Target 2**  
**Chemical Analysis**

# How to "extract" Hg from the samples?

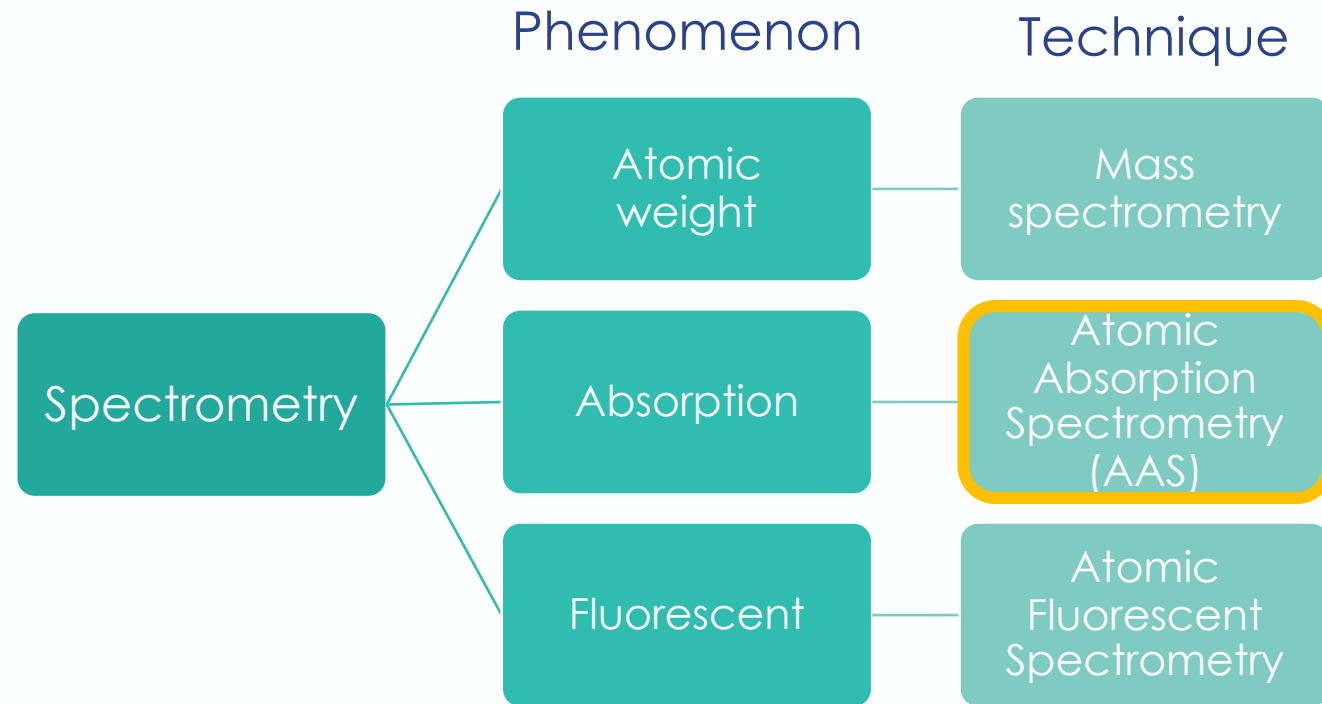


# How to "detect" the existence of Hg?



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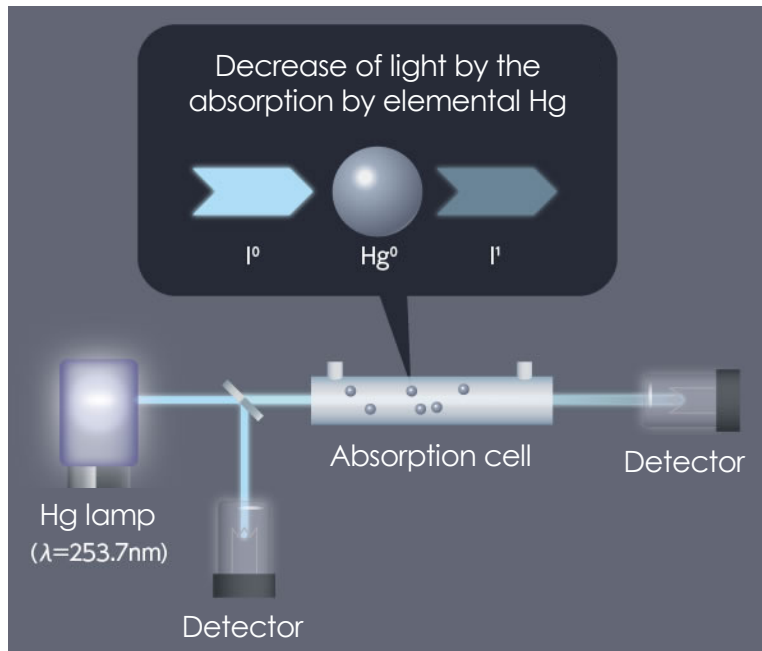
- Need to measure specific spectrum of the target element
- Peak size correspond with the amount of the element
- Spectrometry = "Recording of Spectrum"



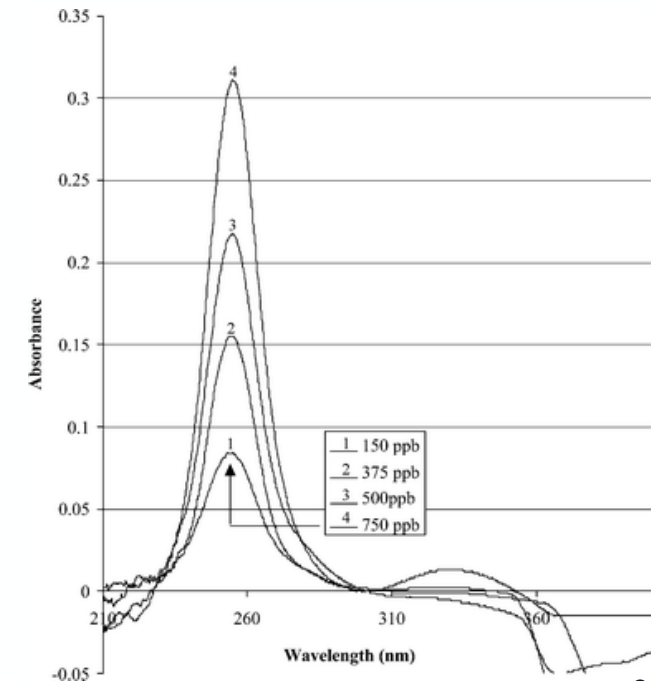
# How to "detect" the existence of Hg?

## Atomic Absorption Spectrometry (AAS)

- Need to measure specific spectrum of the target element
  - Hg specifically absorbs the light with the wavelength of 253.7 nm
- Peak size correspond with the amount of the element
  - Height of the peak
  - Area of the peak



modified from NIC



2004, Tao et al.

# Let's measure your own sample!

## 1. Decide your target

- Hair, Nail
- (Food)

## 2. Sampling

- Hair: grows 1cm from the root per 1 month
- Nail: easy to get but risk of external contamination
- Food: direct source, but tend to have low concentration

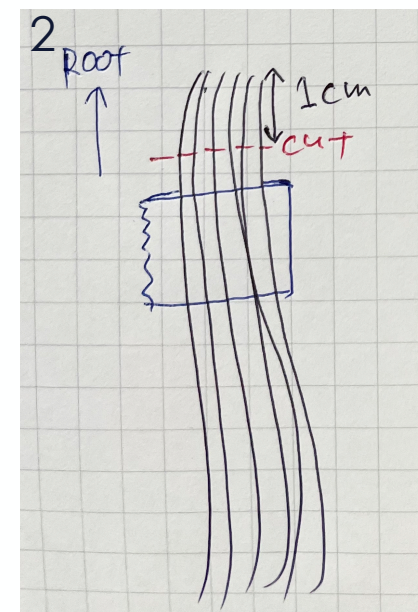
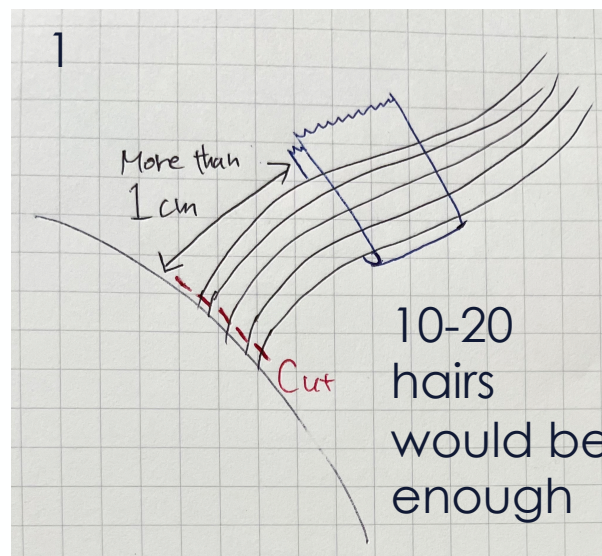
## 3. Homogenization

- Cut into small pieces (4-5 m)

## 4. Application to boat & Weighing

AM

### How to collect hair sample



PM



Access to the form to fill in sample information

<https://forms.gle/LxxCKe8apZCGVDD27>