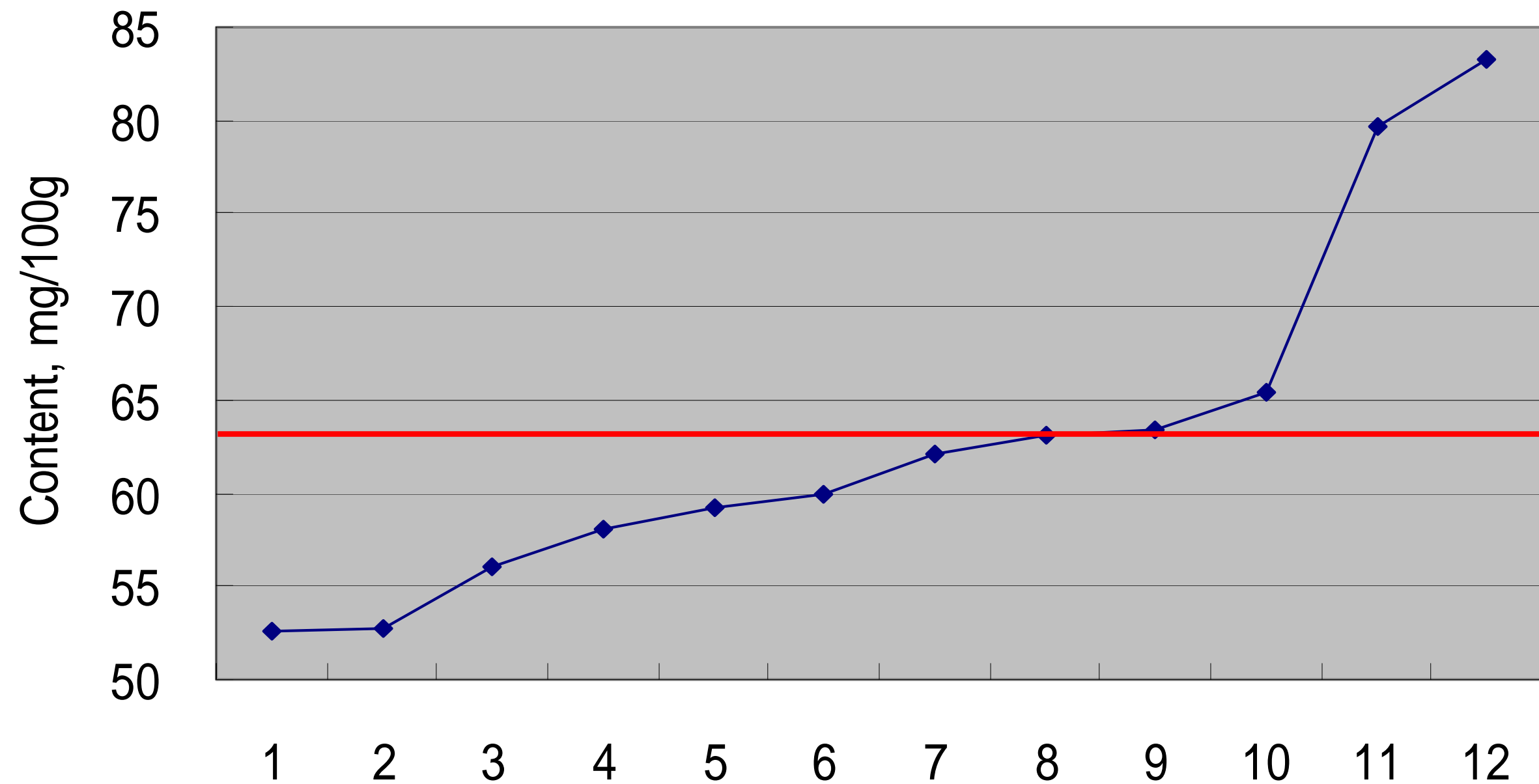


# Sample Preparation

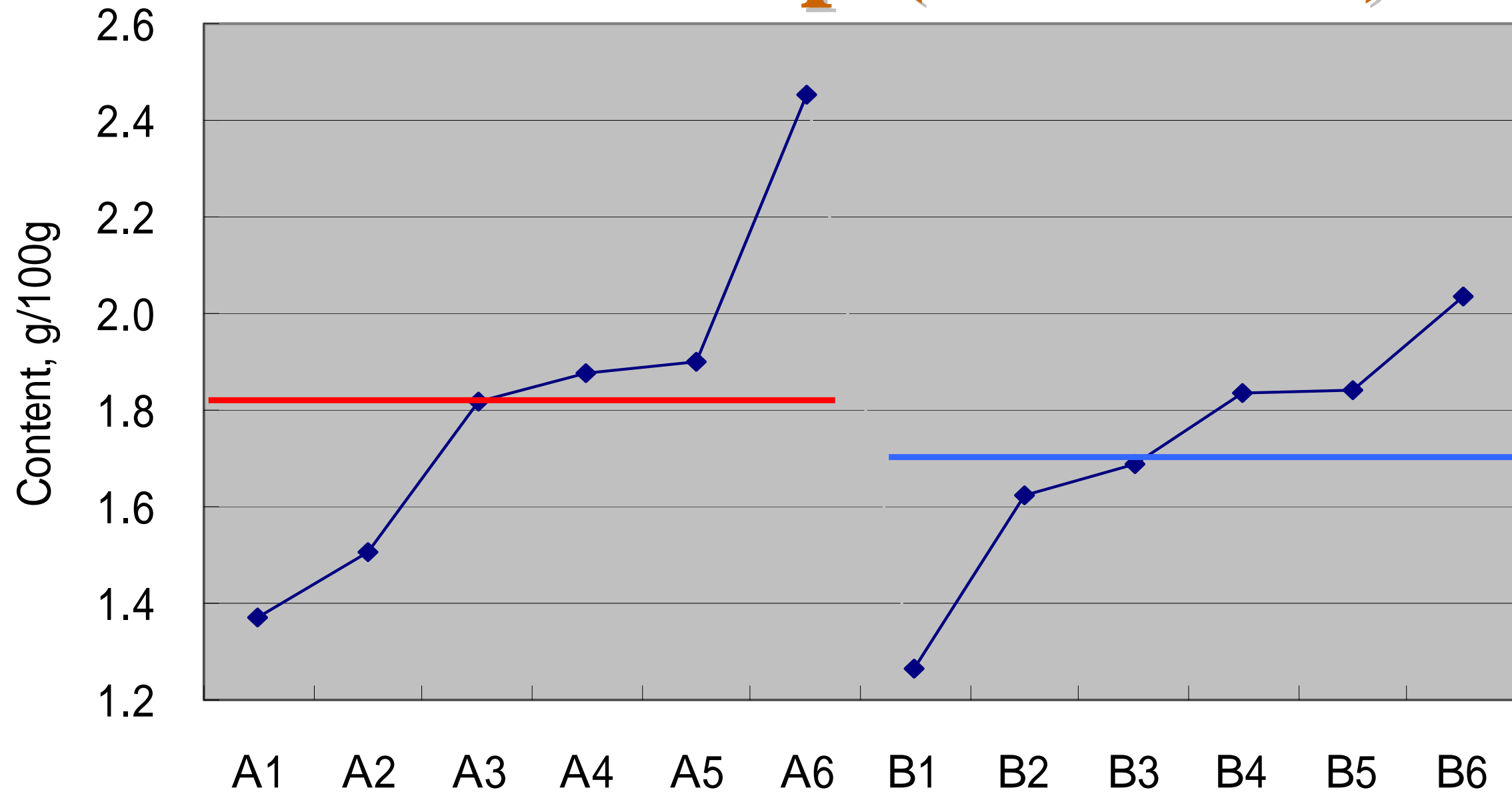
**Do you think the nutrients in each can of ‘Mixed vegetables soup with beef’ are same through out the whole lot?**

**Can one consumer unit be sampled to represent one whole lot or even different lots?**

# Sodium in breakfast cereal



# Protein in soup (2 batches)



# How many samples should be sampled for the analysis?

# How good do the data have to be?

- ✿ **Consumers – a high probability that the label value accurately reflect the nutrient content**
- ✿ **Traders – a high probability of a correct label value passing the compliance test**

# Sampling plan used by CFIA

- ✿ **Select 12 consumer units from a lot**
- ✿ **Composite randomly into 3 composite samples**
- ✿ **Analyze nutrients of 3 composite samples**
- ✿ **Take the mean value of 3 composite samples for each nutrient**
- ✿ **Calculate the standard deviation if needed**

# Sampling plan used by US FDA

- ✿ **A composite of 12 sub samples (consumer units)**
- ✿ **Take each one from each of 12 randomly chosen shipping cases**
- ✿ **Analyze the nutrient contents of ONE composite sample**



# Sampling plan used by FSANZ

- ✿ **At least 10 primary samples should be collected**
- ✿ **Each weigh between 100 – 500 g**
- ✿ **Combine primary samples to form a composite before being analyze**

# Standards for sampling

- ✿ **Codex Guidelines on Sampling (CAC/GL 50-2004)**
- ✿ **SB/T 10314-1999 (Methods of sampling and rules of test)**
- ✿ **ISO 707:2008 (Milk and milk products -- Guidance on sampling)**
- ✿ **ISO 13690:1999 (Cereals, pulses and milled products -- Sampling of static batches)**

# Suggested sampling plan

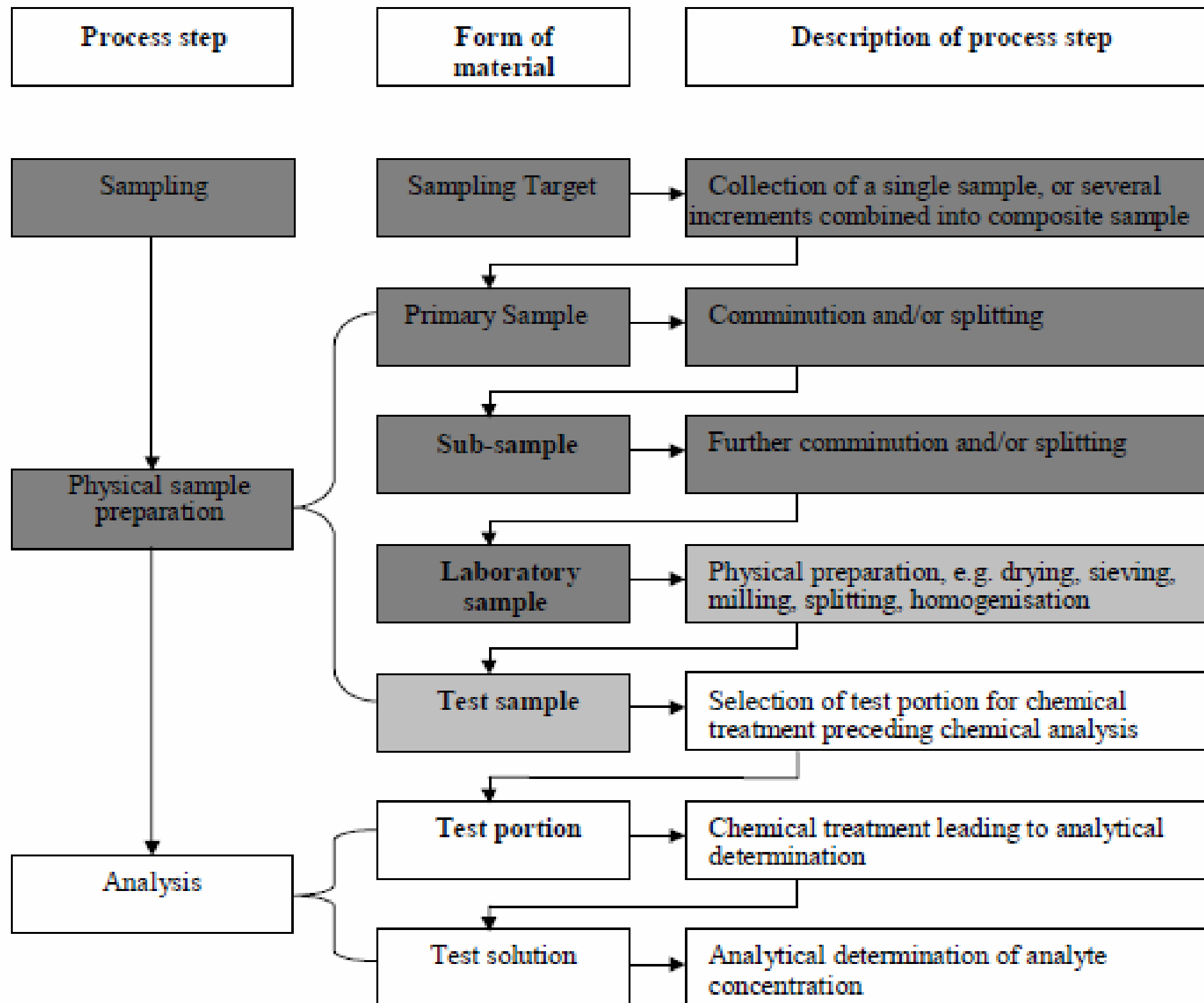
- ✿ **12 consumer units should be collected**
- ✿ **Fewer consumer units is acceptable for consistent formulation and high quality control of raw materials and final product**
- ✿ **Composite the primary samples**
- ✿ **Analyze the composite sample**

# Uncertainty from sampling

# Publication on Sampling Uncertainty

- ✿ **EURACHEM/EUROLAB/CITAC/Nordtest** *Guide on the Estimation of Measurement Uncertainty Arising from Sampling*
- ✿ **Nordtest handbook for sampling planners on sampling quality assurance and uncertainty estimation** *Uncertainty from sampling*

# Sampling as part of measurement process



# Example A – Iron in groundwater

Method	Analytical	Sampling	Measurement
Redox potential	18%	3.8%	18%
ICP-AES	2.5%	3.6%	4.4%

## Example B – Vitamin A in baby porridge

Method	Analytical	Sampling	Measurement
40 g test sample	16.6%	9.9%	19%
4 g test sample	73.4%	9.9%	74%



# Preparation



# Blending



# Freeze drying



# Freeze drying



# Low temperature blending

- ❁ Soft, gummy, thick walled or sticky food



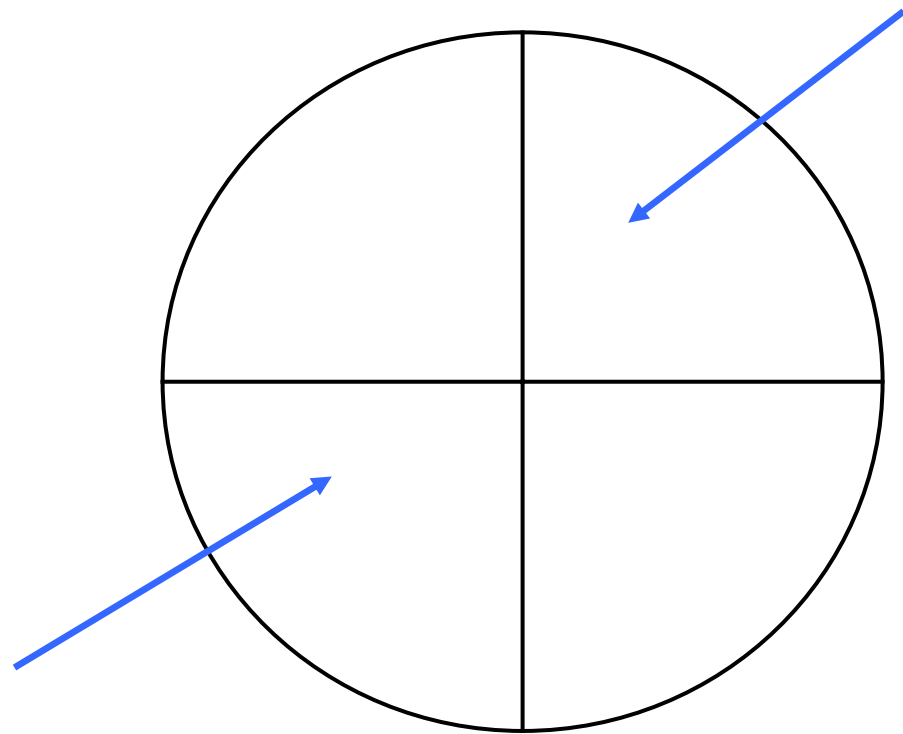
# Handling of sample in laboratory

- ✿ **Protect from changes in composition and contamination in cutting, mincing or grinding food samples**
- ✿ **In separating the edible and inedible matter, the cultural norms of the population consuming the food need to be considered**

# Sub-sampling (1)

## ✿ Quartering

The opposite quarters are to be removed



# Sub-sampling (2)

A sample divider for powder samples





# Storage of analytical sample

- ✿ For dried or preserved food, it may be stored in room temperature
- ✿ For milk and liquid sample, store between 0 and +4°C
- ✿ For other foods, store at -18°C or colder
- ✿ The container must be closely sealed with the minimum of headspace

# Points to note

- ✿ **Representative sampling – not very small amount**
- ✿ **Homogeneity is critical**
- ✿ **Analytical sample – as large as possible**

# Queries



# **If some products are packed in liquid, should the water be analyze?**

- ✿ Case by case**
- ✿ If the solid part is usually consumed with the liquid, e.g. borsch, the content in the whole package should be analysed for nutrient content**
- ✿ If the consumer is advised clearly to consume the solid product without the liquid, e.g. abalone canned in water, the solid part may be analysed for the nutrient content**

# For health foods packed in the form of 'capsule', should the capsule be analyze together?

- ✿ As the capsule is usually consumed together, the content of the whole capsule should be analysed for nutrient content
- ✿ Unless the direction clearly specified the content in the capsule should be removed for consumption

# **If some products contain shell, should the shell be included in the calculation of nutrient content?**

- \* If the shell is usually removed before processing or direct consumption, e.g. egg, peanut, crab, etc., the shell should be removed before analyse for the nutrient content**

# Does Shiitake mushroom needs to remove stem before analyze?

- ✿ **Mushrooms or fungi belongs to vegetable**
- ✿ **Exempted if no other ingredients has been added and packed**

# Tea and coffee are quite similar, can coffee bean or powder be exempted?

- ✿ **Case by case**
- ✿ **If brewed coffee does not have any energy value or contain any contents of core nutrients, the prepackaged product could be exempted**
- ✿ **For ‘espresso’, both the energy value and protein content are unlikely able to meet the definition of zero**



**Thank you for your attention**

