Sample Preparation

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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?

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How many samples should be sampled for the analysis?

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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**

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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

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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

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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

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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)

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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

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Uncertainty from sampling

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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***

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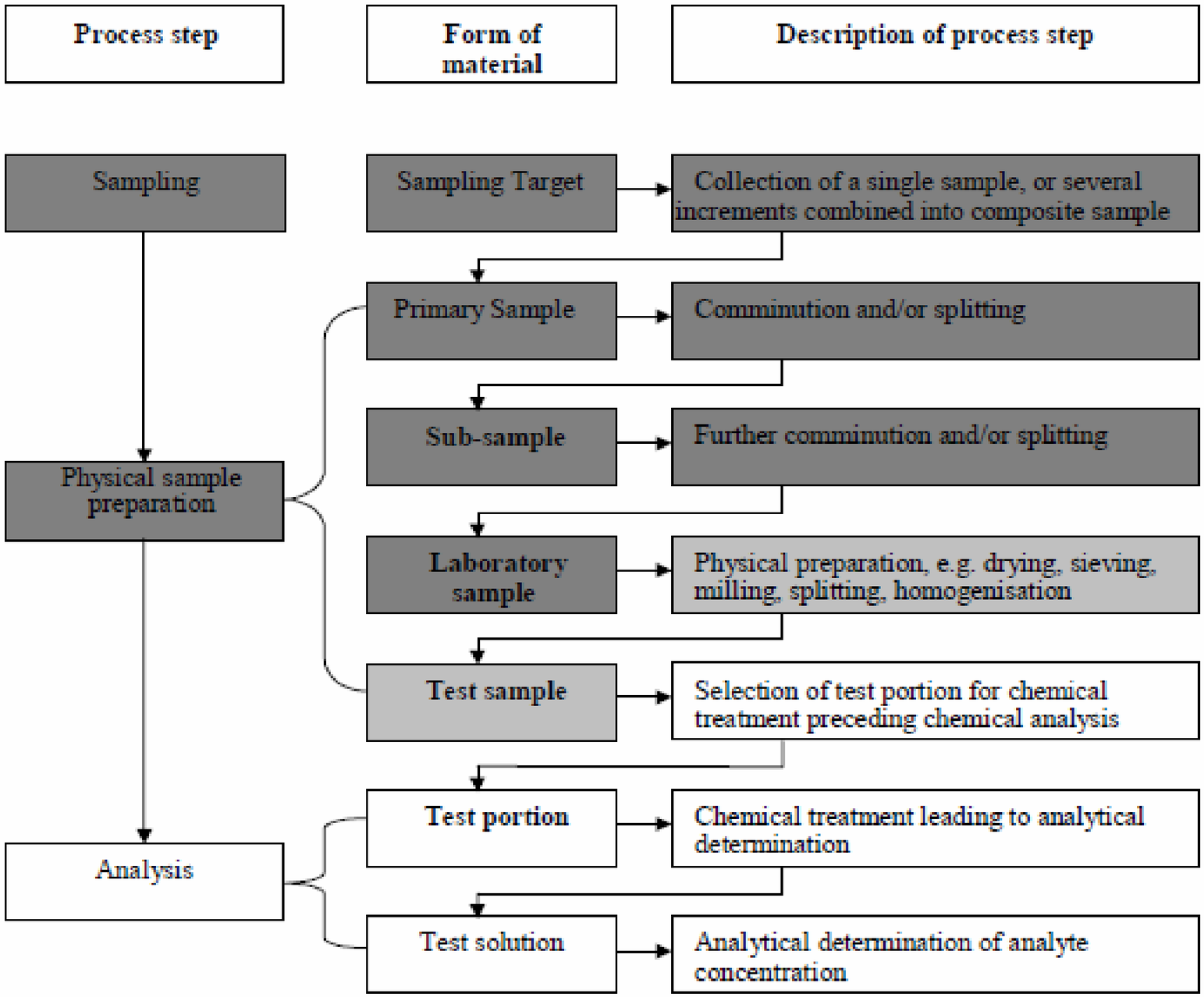
Sampling as part of measurement process



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Example A – Iron in groundwater

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

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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%

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Preparation

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Blending

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Freeze drying

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Low temperature blending

- **Soft, gummy, thick walled or sticky food**

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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**

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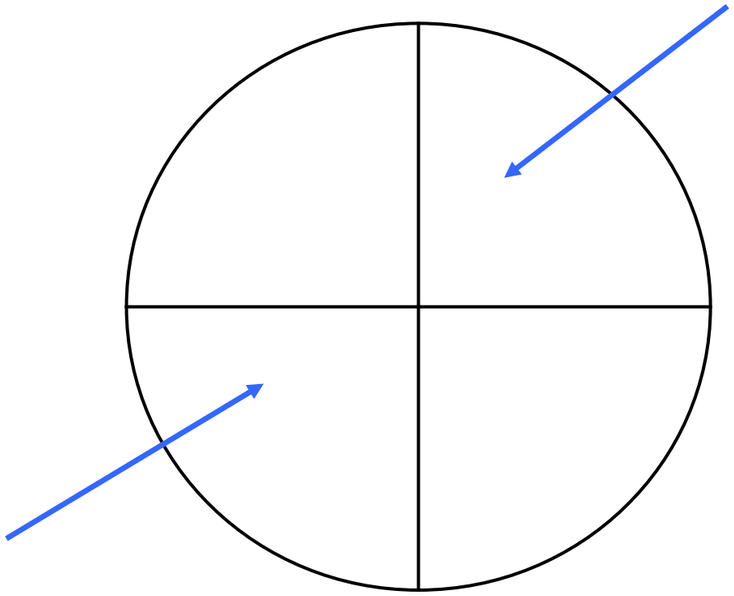
Sub-sampling (1)

- **Quartering**

The opposite quarters are to be removed



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Sub-sampling (2)

A sample divider for powder samples

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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

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Points to note

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

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Queries

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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

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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

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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**

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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

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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

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Thank you for your attention

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