



Twinning Project IL/11
Implementation and Strengthening the Environmental Framework for
IPPC, Resource Efficiency and Eco-Management in Israel



Representative Sampling - Documentation

Andreas Moser, BMLFUW Austria

Training on waste analysis
Activity 1



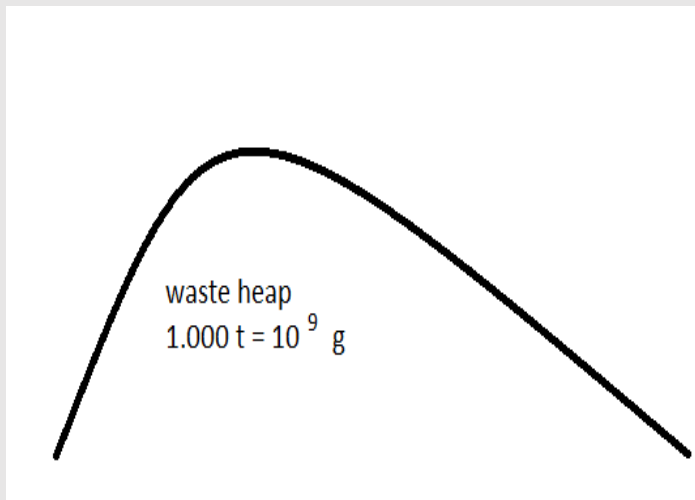


Error in Waste Analysis

Well defined analytical methods

e.g. ICP $\sigma = 0,2\%$ to $0,5\%$ in case of ppm-concentration

Sampling: complex issue, no harmonized CEN standards



40 combined random samples

- a $2,5 \text{ kg} = 100 \text{ kg} = 10^5 \text{ g}$

Laboratory sample $10 \text{ kg} = 10^4 \text{ g}$

Analytical sample $1 \text{ kg} = 10^3 \text{ g}$

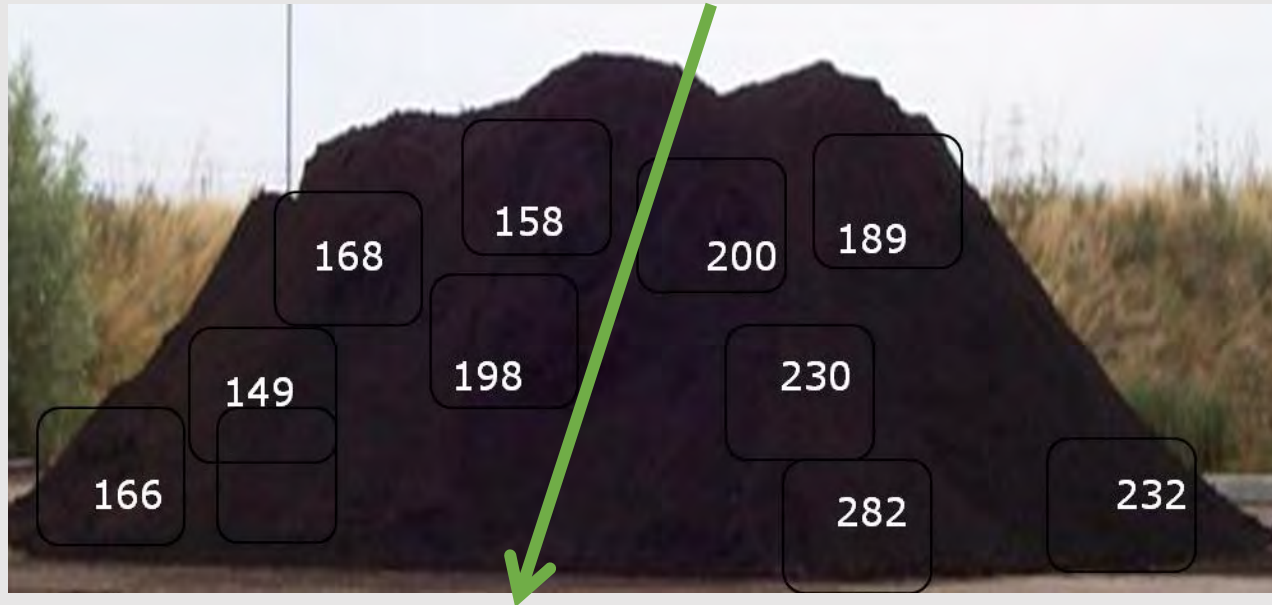
Test portion $100 \text{ mg} = 10^{-1} \text{ g}$

Ten orders of magnitude !!!





Average or Maximum ?



Limit value: 200 Average: 197,2 test passed !!!
However: maximum is 282
Left side average 167,8 - right side average 226,6





Sample Keeping



“Best solution“ – separate random samples and a combined test sample
Analytical result near limit value (above) – separate analysis of the stored samples.





Documentation



- Sampling plan.
- Traceability of each sample to a specific sampling point.





What is the purpose of sampling

- a) Classification of a heap – waste stream – waste batch ?
(sub batches ?)
- b) Identification of a hot spot/contamination ?
- c) Compliance test ?

To interpret and compare analytical results a proper documentation of the sampling procedure is indispensable.





CEN Technical Reports and Standards

EN 14899 Characterization of waste - Sampling of waste materials

Framework for the preparation and application of a sampling plan

CEN/TR (Technical Report) 15310 Part 1 – 5: Characterization of waste. Sampling of waste materials.

Part 1: Guidance on selection and application of criteria for sampling under various conditions

Part 2: Guidance on sampling techniques

Part 3: Guidance on procedures for sub-sampling in the field

Part 4: Guidance on procedures for sample packaging, storage, preservation, transport and delivery

Part 5: Guidance on the process of defining a sampling plan





Implementation of CEN Technical Reports

Austria:

ÖNORM S 2127 Basic characterization of waste heaps or from solid waste from containers and transport vehicles

ÖNORM S 2123-4 Sampling plans for waste – Part 4: sampling of liquid or paste-like wastes

Germany:

LAGA PN 98: Guideline on the procedure for physical, chemical and biological investigations related to the disposal of waste

Basic rules for the collection of samples from semi-solid and solid waste as well as deposited materials

Available in German: <http://www.laga-online.de/> Mitteilung 32





Twinning Project IL/11
Implementation and Strengthening the Environmental Framework for
IPPC, Resource Efficiency and Eco-Management in Israel



Contact & information

ANDREAS MOSER

**FEDERAL MINISTRY OF AGRICULTURE,
FORESTRY, ENVIRONMENT AND
WATER MANAGEMENT**

Division V/3, Waste Management Planning,
Waste Treatment and Remediation
of Contaminated Sites
Stubenbastei 5, 1010 Vienna
T +43 1 71100 613521
andreas.moser@bmlfuw.gv.at
bmlfuw.gv.at



**MINISTERIUM
FÜR EIN
LEBENSWERTES
ÖSTERREICH**

