

Training on Stable Isotope Analysis Introduction

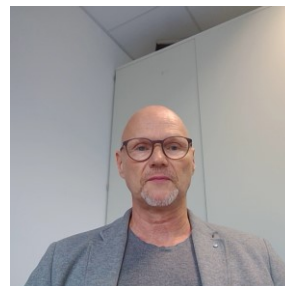
Carsten Fauhl-Hassek



The German Federal Institute for Risk Assessment (BfR)

- Founded in 2002 to strengthen consumer health protection in Germany and on the international level
- Independent scientific assessment, research and the transparent communication of health risks
- Safety of foods and feeds, products and chemicals

- Other working areas: Exposure, Experimental Toxicology, Centre for Documentation and Evaluation of Alternatives to Animal Experiments...



The German Federal Institute for Risk Assessment (BfR)

- 1153 employees (2020), 523 Scientists
- 20 Reference Laboratories (14 NRL) including the **Senoir Expert Office for Wine**
- Federal Bureau for Good Laboratory Praxis (GLP), EFSA Focal Point,...
- Department: **Safety in the Food Chain**
 - Unit 83: **Product Identity, Supply Chains and Traceability**

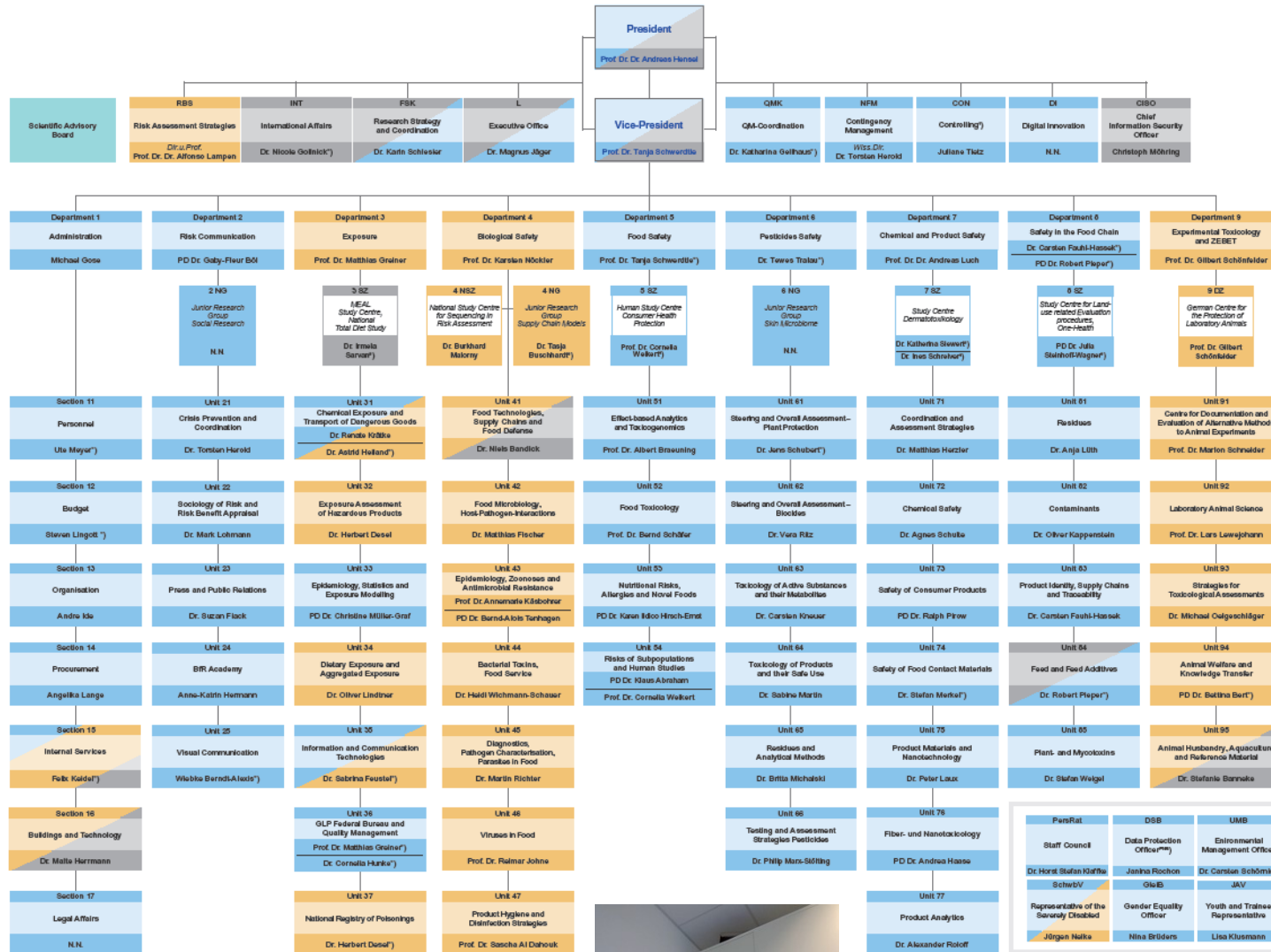


Alt-Marienfelde



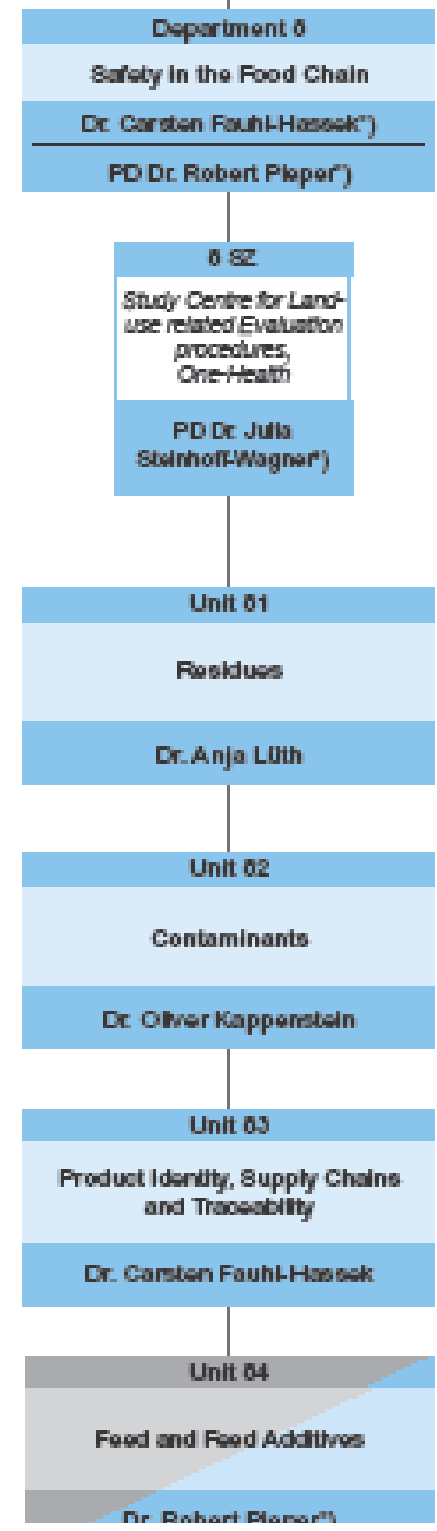
Marienfelde





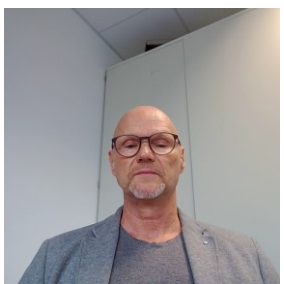
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*) Temporary appointment or entrusted with the performance of tasks
**) Represents the Head of Unit in all matters as necessary
) Reporting
Status: September 2021

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Representative of the Severely Disabled	Gender Equality Officer	Youth and Trainee Representative	Fire Prevention Officer
Jürgen Natta	Nina Bräders	Lisa Klusmann	Andreas Hühne



A theoretical training in wine authentication analysis

Topics are selected relevant chromatographic approaches and the analysis of stable isotope ratios (for the elements C, O and H) of wine. These ratios are used to determine e.g. the origin of a wine, but also to identify watering or the addition of beet or cane sugar.

The training covers:

- Theory and technical background
- Practical advice on sample preparation and data analysis
- Validation and quality assurance

Modules

- Welcome and introduction to Authenticity
- IRMS – Stable isotopes introduction
- SNIF-NMR
- IRMS – ^{13}C analysis of ethanol of wine and ^{18}O analysis of wine water
- IRMS – System Tests and Trouble Shooting
- IRMS – Reference Material and Quality Control
- EU Wine Database
- Chromatographic methods
- Validation and quality assurance

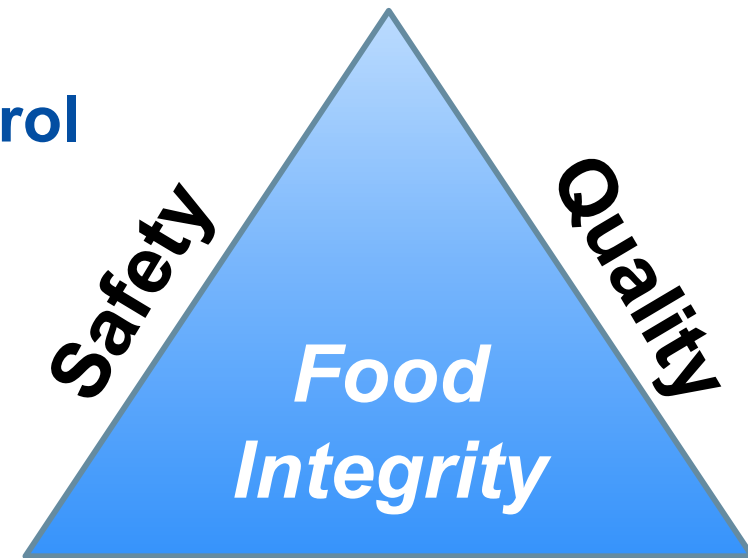


Food Integrity

Purpose of analytical methods in **food control**

- 1) Safety !! (negative health impacts)
 - residues
 - contaminants
 - allergens
 - additives

2) Proof of specifications, health claims

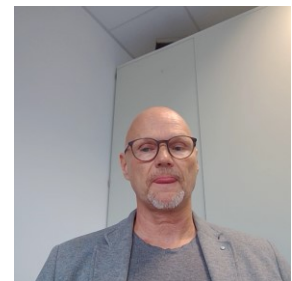


Authenticity

Food integrity: 'the state of being whole, entire, or undiminished or in perfect condition'

Chris Eliot 2019 QUB:

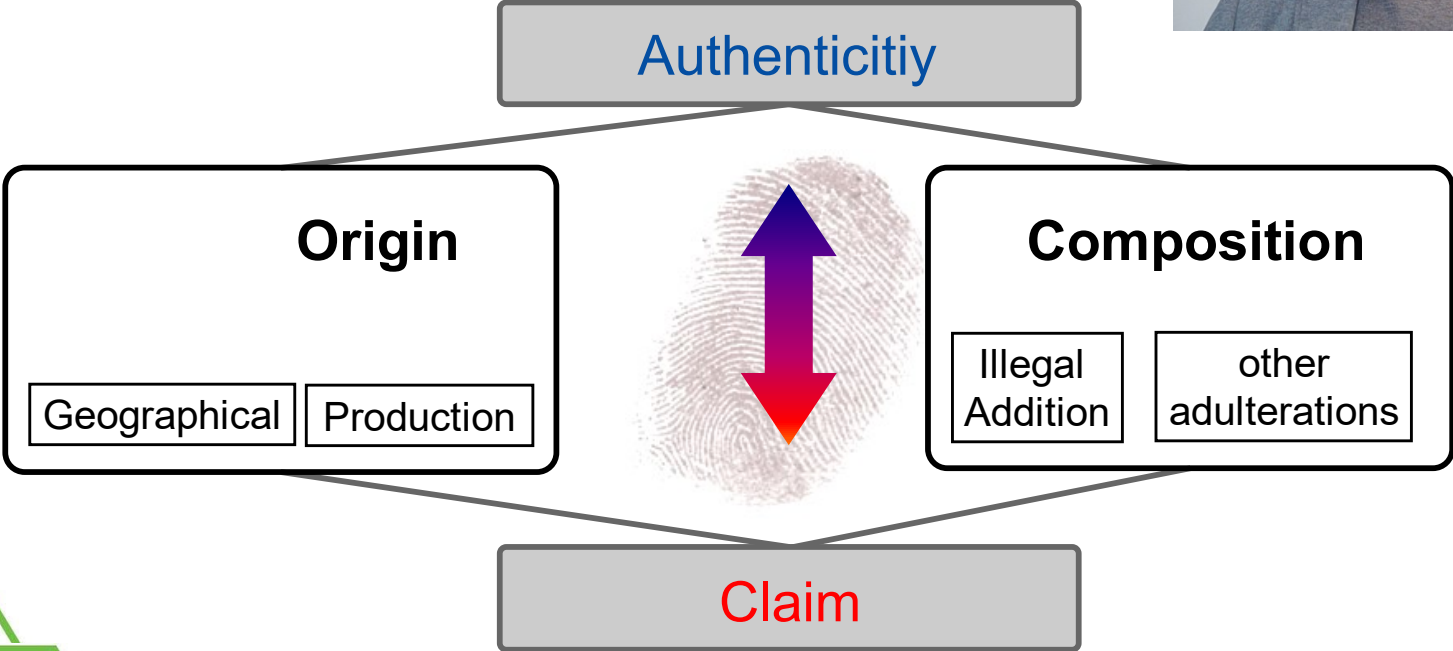
"Food integrity: when all people, at all times, have access to food which is safe, authentic and nutritious. The systems used to produce the food are sustainable, ethical , respect the environment and protect the human rights of all workers."



Authentication of food



CEN Workshop Agreement 17369:2019 - Authenticity and fraud in the feed and food chain. Concepts, terms, and definitions



Current activities

- **CEN NEW** Technical committee **Food Authenticity**: 6 new WG: Species, NMR, Coffee, Honey....and possibly terms/definitions, validation of non-targeted approaches...

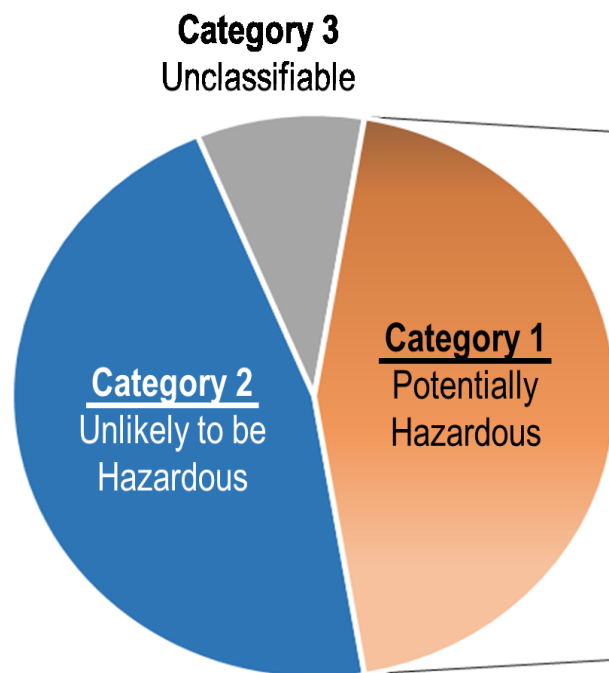
Food adulteration = Consumer risk?



Food fraud database

(owned by Decernis, formerly by USP)

- Period of 2012-2017
- 2970 food fraud records
 - 1294 adulterants

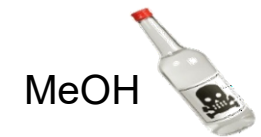


History of causing illness or death

History of causing safety-related regulatory action or allergens

Potential to cause illness or injury

Lack of information or authorization



MeOH



Sudan I



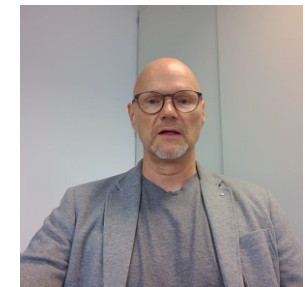
Peanuts in spices

e.g. ethylene glycol, salicylic acid

e.g. expired meat, sawdust



Everstine *et al.* 2018, *Journal of Food Protection* 81: 31-36.



EUROPEAN COMMISSION
DIRECTORATE-GENERAL FOR HEALTH AND FOOD SAFETY
Directorate G: Crisis management in food, animals and plants
Unit DDG2.G5.: Alert, traceability and Committees



Brussels, 20 September, 2016



FEED
VERY URGENT
ALERT NOTIFICATION: 2016.1301
ORIGINAL NOTIFICATION
SUBJECT: AFLATOXINS IN CORN FROM BRAZIL

PAGES: COVER PAGE (1) + 9 + 3 file(s) attached

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yourfreetemplates.com

Verification of the geographical origin ?

- ✓ Information on the identity of the sample
- ✓ Fast, possibly at entrance of food/feed

Screening-method in following cases:

- ✓ Risk of mislabeling because of ban or objections
- ✓ Analysis for contaminant laborious & expensive
- ✓ Not identified unknown health risk for animals and humans

Authenticity of origin as indicator for pro-active risk detection and further investigations

END Introduction Part A