

Food Safety in EU: *„basic issues“*

Jiri Ruprich

Faculty of Veterinary Hygiene and Ecology,
Veterinary and Pharmaceutical University, Brno

Palackeho 3a, Brno, CZ, Email: jruprich@chpr.szu.cz



Safety policy / programme in EU: shared responsibility for all stakeholders

- „European food safety system should be proactive, dynamic, coherent and fully comprehensive instrument to ensure“

high level of human, animal, plant **health
and
environment **protection****



Content

- 1. Part 1 - Basic food safety principles**
- 2. Part 2 – Practical examples (CZ perspective)**



Part 1: Basic food safety principles



Content – part 1

1. Basic food safety principles
2. Regulatory aspects – general principles
3. Terminology – what is a safe food
4. Risk based approach
5. Role of EFSA
6. The EU food safety management system: DG SANTE
7. Food and Veterinary Office and system RASFF



8 basic food safety principles in EU

1. Comprehensive and integrated approach
2. Responsibility of all stakeholders
3. Traceability
4. Coherent, effective and dynamic
5. Transparent
6. Risk analysis based
7. Precautionary principle
8. Other legitimate factors



**FOOD
SAFETY
FIRST!**



Regulatory aspects



- **European food law**
 - **Regulation European Parliament and Council No. 178/2002**
– directly applicable in all MSs

- *General Objectives*
 1.integrated "farm to fork" approach is considered as a general principle for EU food safety policy
 2.rights of consumers to safe food and to accurate and honest information.
 3.harmonize existing national requirements in order to ensure the free movement of food and feed in the EU.
 4.commitment to its international obligations, except where this might undermine the high level of consumer protection targeted by the EU.



Terminology: often not fully understood

- „Safe“ food – theoretically 3 intrinsic attributes

Covered by „EU food law“ : Regulation No.178/2002

1. **Safe** – socially acceptable health risk
2. **Wholesome** – fit for human consumption
3. **Sound** – nutritional/biological value



Is this food still safe and wholesome?



Is this food safe, wholesome and sound?

Bottled water = food >>> deionized water criticism - a serious conflict in CZ



Product Information

Activate Drinks Deionized Water 20oz (24)

Through our deionization filtering process, we remove minerals that contain impurities. Activate Deionized Water. **Pure Water. Nothing More.**

Nutrients deteriorate sitting in water. So we don't add any. In fact, we go further-by removing minerals that contain impurities through our unique deionization and reverse osmosis purification process.



Risk based approach

- *The Regulation No 178/2002 establishes the principles of risk analysis*
- food safety must be underpinned by strong science
 -not all in food law has a scientific basis, consumer information or the prevention of misleading practices does not need a scientific foundation
-scientific assessment of risk must be independent, objective and transparent
-risk management is the process of weighing policy alternatives in the light of a risk assessment results



Independence of risk assessment and and risk management

- Separation of risk assessment and risk management bodies to prevent influence of policy makers on independent scientific work
- Recommended also for national authorities

EC - DG SANTE

EFSA



Role of European Food Safety Authority

What is EFSA?



New EFSA's seat, Parma, IT

- **E**uropean
 - **F**ood
 - **S**afety
 - **A**uthority
- The European reference body
 - Covers the entire food chain
 - Assess, advise, communicate
 - Independent, trusted, based on sound science



Role of European Commission (EC): DG SANTE

European Commission > DGs > Health and Food Safety

HEALTH FOOD ANIMALS PLANTS AMR


ABOUT US
FUNDING
INFORMATION SOURCES
EVENTS
NEWS
CONSULTATIONS AND FEEDBACK
EXPERT GROUPS
COMMITTEES

OUR JOB IS TO HELP MAKE EUROPE'S CITIZENS HEALTHIER, SAFER AND MORE CONFIDENT.



News

World Hepatitis Day (28 July 2017)



Statement by Vytenis Andriukaitis, EU Commissioner for Health and Food Safety

For more information 28 JULY 2017

The TRACES Annual Report 2016 is published



In 2016, TRACES users further intensified their activities, with over 35 000 users worldwide generating nearly 2 million certificates and official attestations concerning trade within the European Union (EU), monitoring procedures at borders, but also imports and exports of animals, semen and embryos, food, animal feed, animal by-products and, last but not least, plants.

For more information and to view the 2016 Annual Report, Infographic and Country sheets, please visit the TRACES website. The report is available in five languages.

For more information 27 JULY 2017

Commissioner
VYTENIS ANDRIUKAITIS
Health and Food Safety
#TeamJunckerEU



AMR
Antimicrobial Resistance

@EU_Health

EU_Health
@EU_Health

#WorldHepatitisDay
"Together we can eradicate #Hepatitis in Europe" statement from @V_Andriukaitis #WHD2017 #EU
ec.europa.eu/dgs/health_foo ... pic.twitter.com/t2Ap2iGtZ3

2 days

More tweets



EC: Food and Veterinary Office

- The mission of the Food and Veterinary Office is, through its audits, inspections and related activities, to:
 1. **check on compliance** with the requirements of EU food safety and quality,
 2. **contribute to the development** of European Community policy in the food safety
 3. **contribute to the implementation** of effective control systems in the food safety
 4. **inform stakeholders** of the outcome of its audits and inspections.....



EC: Rapid Alert System for Food and Feed

- ❑ was put in place to provide food and feed control authorities with an effective tool **to exchange information** about measures taken responding to serious risks detected in relation to food or feed.
- ❑ this exchange of information helps Member States **to act more rapidly** and in a coordinated manner in response to a health threat caused by food or feed.



Part 2: Practical examples



Content – part 2

1. Actuality 1 – food fraud
2. Actuality 2 – missing limits for foods / practices
3. Actuality 3 – mechanically separated meat
4. Actuality 4 – food enzymes
5. Actuality 5 – cumulative exposure
6. Actuality 6 – novel food



Paramount troubles with food fraud / safety

Horse meat scandal



EU consumer's trust to the system is in a risk

- ❑ Scandal with horse meat opened long known **problems with food fraud**;
- ❑ EU made tens of thousands of analyses, costs are huge, the health risk from the content of phenylbutazone is minimal (see the EFSA evaluation/EMA);
- ❑ **Catering/restaurants are suitable destinations for the deception of the consumer** - who is responsible for this part of food control?



Nutritional composition of horse meat

- horse meat is nutritionally better than beef – but some people have ethical problems to eat it
- around 400 horses is slaughtered in the Czech Republic per one year,
- there is evidence of BUTE contamination

Nutritional values for beef and horse meat (100g)		
nutrient	beef	horse meat
energy (kJ)	905	493
water (g)	63,42	73,77
protein (g)	16,73	21,45
fat (g)	16,41	3,55
SFA (g)	6,67	1,104
MUFA (g)	7,42	1,19
PUFA (g)	0,73	0,62
cholesterol (g)	0,068	0,064
saccharides(g)	0,35	0
sodium (mg)	76,7	49,5
magnesium (mg)	23,8	24
phosphorus (mg)	193,9	210,5
chlorides (mg)	64,5	x
potassium (mg)	314,5	352,5
calcium (mg)	9	10,5
iron (mg)	2,87	3,66
zinc (mg)	3,74	2,8
iodine(mg)	0,006	x
vitamin A (mg)	0,016	0,03
vitamin D (mg)	0,0007	x
vitamin E (mg)	0,62	0,52
vitamin B1 (mg)	0,142	0,135
vitamin B2 (mg)	0,206	0,185
vitamin C (mg)	2	1

Source: compiled FCD of the NIPH



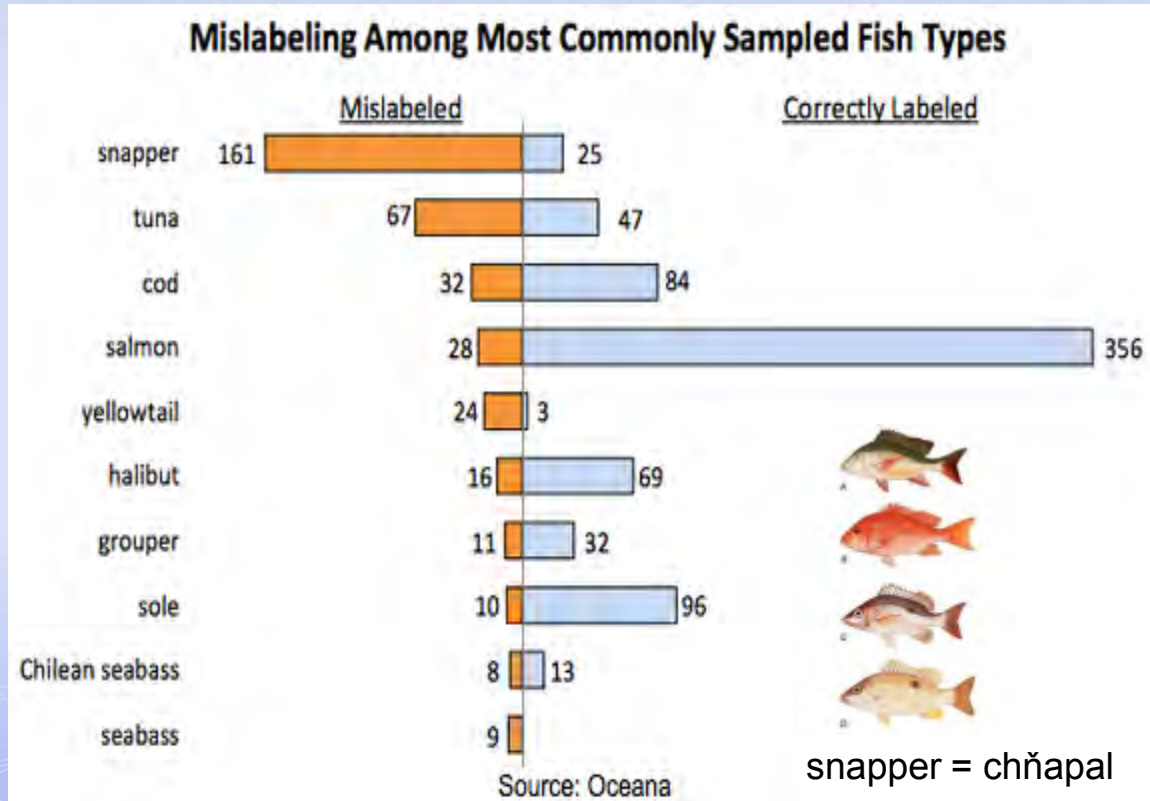
Targets for food control system

- ❑ all cases, where meat is minced, hidden in meal or industrially processed – for example, detection of beef kebab
- ❑ horse meat is more expensive than beef – there is no reason for food fraud



Is there something even more fraudulent?

- ❑ Venison – in restaurants (?%) – goulash, minced meat
- ❑ Fish – species? Some kinds (Atlantic cod) more expensive – therefore replaced by cheaper fish



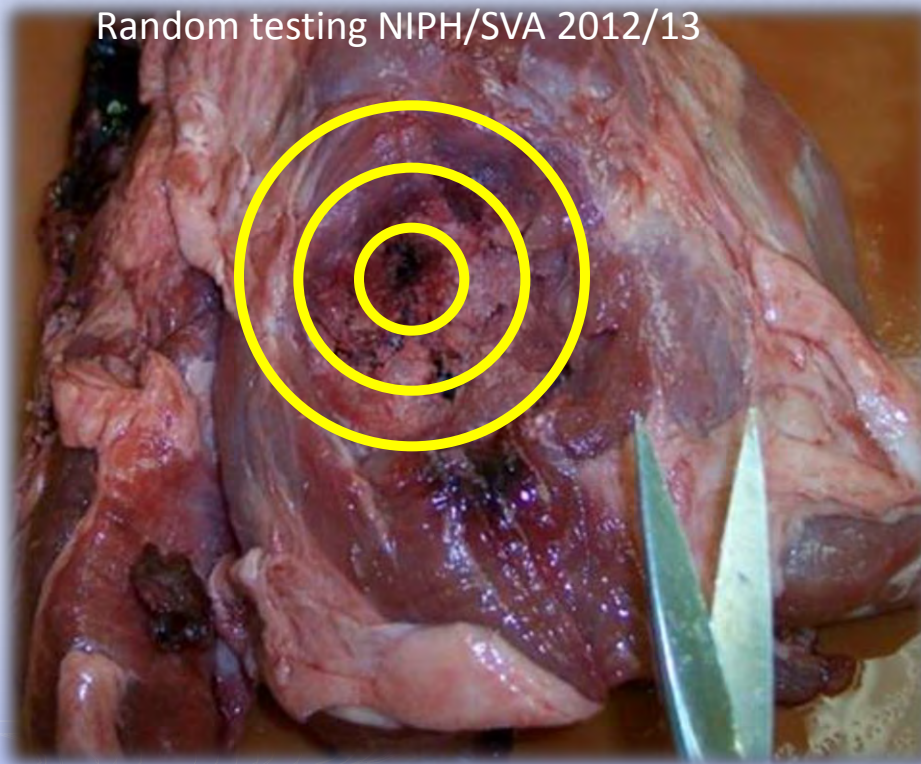
Conclusions – food fraud challenges

- ❑ There are many challenges for food control organizations– web?
- ❑ How to organize quality/safety control in catering/restaurants?
- ❑ How to organize harmonized food control among EU member states?



High content of lead in venison „bloody cut“

Bloody cut from hunted game – not obligatory confiscated – used into meat products?



Random testing NIPH/SVA 2012/13

Bullet hole – wild pig

Meat area	ug Pb/kg meat (example, N=5)
Bullet hole (1cm)	40059 - 1279666
Surrounding (1-3cm)	8046 - 115647
Surrounding (3-5cm)	12 - 4684
Control (>10 cm)	7 - 346

CZ national action limit = 100 ug Pb / kg

There is no safe limit for Pb in food !!!



Discussion about MSM

(mechanically separated meat)

- ❑ Consumers dislike consumption of MSM
- ❑ Media often classify MSM as „food wastes“ – questionable from safety and quality point of view
- ❑ EFSA opinion 2013 (pork and chicken MSM):
 - Microbiological risk comparable with minced meat, depends on the separation pressure
 - Chemical detection is possible according to Ca and possibly also cholesterol contents
 - Regulation EC No. 2074/2005 - max content of Ca in MSM/MOM 0,1% = 100mg/100 g fresh product)

Often questioned:





Example of discussion about MSM



- Ms. Kateřina question: What is composition of your chicken nuggets?
- McD answer - May 18, 2013 11:06
 - „....Chicken McNuggets have about 50 % of chicken meat (specifically roughly minced breast), rest is marinade and coating (flour, dough, crumbs).
(<http://www.narovinu.mcdonalds.cz/>)

Test of NIPH(5/2013 „Nutrimon“):



Ca analyses

9 – 12 mg Ca per 100 g strips



12% of max Ca limit for MSM, and 80% NUTR Ca value

18 – 20 mg Ca per 100 g nuggets



20% of max Ca limit for MSM, and 133% NUTR Ca value
Chicken nuggets – max 50%
Other ingredients ???





Usage of trans-glutaminases

(enzymatic meat glue)
(covalent bounds among amines)



- ❑ **Public question: how is possible that minced meat in nuggets stick together?**
- ❑ *Our answer: we do not know, we asked McDonald*
- ❑ *Hypothetically: due to trans-glutaminase, no information about „marinade“*
- ❑ Regulation EPC No. 1332/2008 – register of food enzymes should be established (but still not on a table). Labeling ?

US FDA GRAS certificate 1999 - trans-glutaminase	USAGE LEVEL
Food category	[PPM]
Processed Cheeses	250
All Natural Hard Cheeses (Domestic)	100
Cream Cheese	70
Refrigerated Yogurt	30
Frozen Desserts	20
Vegetable Protein Dishes	25
Negeburgers	25
Meat Substitutes	25



**Traditional use:
some fish products**



Cumulative and aggregated exposure assessment and risk characterization



Pesticides:

typical example for cumulative and aggregated exposure (exposure to mixtures)

- ❑ **Cumulative exposure** = exposure via one way from various sources (e.g. from various foods)

- ❑ **Aggregated exposure** = exposure via various ways – p.o. + p.c. + inh.

- ❑ Why it is important?
 - Endocrine disruption, non-monotonous dose-response relationship

- ❑ In reality – we are exposed to mixtures



Consumer concerns regarding pesticide residues on Fruit & Vegetable



Source: Eurobarometer on food-related risks 2010



Example – fruit and vegetable on the CZ market

□ CZ national monitoring 2009/10

Cabbage

Potato

Pepper

Tomato

Apple

Carrot

Pear

Lettuce

Cucumber

Wine Grapes

Celery

Lemon

Orange

Peach

Banana

Mandarin



No residues

1 residue

2 residues

3 residues

4 residues

5 and more residues

Retailers - private standards



Max. 70% MRL
Max 80% ARfd
Max. 80% MRL (sum)
Max. 80% ARfD (sum)
Max. 3-5 AS depending crop



Max 70% MRL
Max. 100% ARfD
Max. 3-5 AS
Red list AS



Max. 70% MRL
Max.50% MRL for EDEKA brand
Max. 100% ARfD
No max number AS



Max. 70% MRL
Max. 70% ARfD
No Max nb AS
Cumulated MRM : 150%
Cumulated Arfd : 100%



Max. 70% MRL
Max. 70% ARfD



Max. 70% MRL
Max 50% MRL for REWE brand
Max. 70% ARfD
Red list AS

Retailers - private standards



Max. 50% MRL



Max. 50% MRL



Follow Pesticide reduction programme of Global 2000 Austria –based on most vulnerable consumers

Cumulated PRP reidues limit apply



Max. 33,3% MRL

Max. 70% ARfD

Max 100% ARfD (sum)

No max nb AS

No cumaltion MRL

If former German MRL

lower than EU

harmonized those apply



Max. 33,3% MRL

Max 100 % ARfD

Max 100% ARfD (sum)

No max nb AS

No cumaltion MRL



Max. 80% MRL (sum)

Max. 80% ARfD (sum)

Max 5 AS



Retailers - private standards



- Max. 70% MRL
- Max. 70% ARfD
- Max AS (> 0,01 ppm)
from 3-5 depending of crop



- Product specific grading for multiples residue with financial sanction for exceeding legal limits or max nb AS

tegut...

- Max. 70% MRL
- Max. 70% ARfD
- Max AS 4 (not including post harvest)
- No cumulative charge



Conclusions: recommendations for pesticides

□ Food control system

- Time-seasonally based sampling plan

□ Retail system

- Private standards – limited number of used pesticides

□ Consumers

- Peel citruses and banana (usual practice)
- Peel cucumbers
- Wash fruit and vegetable thoroughly by warm water (wine grapes, peach).



ACTUALITY 6 - novel foods

Insect as a food in Europe



**We know more than 1 100 species of edible insects.
Insect is not characterized as a whole animal – therefore it is not covered by
Regulation No. 258/1997 on novel foods – no regulation now**



Insect as a dish

Insect can be a good source of proteins and omega-3 FA



Insect as an ingredient in bread



Cases „Insect as a food“

pending application for authorization EC CAFAB

(2007-2013)

	Case	Latin name	Request from	Date
1.	Brood (honeybee larva and honey)	<i>Apis mellifera</i> L.	F	7. 5. 2007
2.	Frozen fried silk worms	<i>Bombyx mori</i> L.	DK	23. 10. 2007
3.	Frozen fried grasshoppers	<i>Patanga succincta</i> L.	DK	23. 10. 2007
4.	Ant-eggs	<i>Liometopum</i> spp. Wheel.	D	22. 1. 2008
5.	Japanese giant hornet larvae	<i>Vespa mandarinia</i> Smith	UK	18. 3. 2009
6.	Candy with whole insects	Different species	DK	10. 6. 2009
7.	Mezcal with worm	<i>Scyphophorus acupunctatus</i> Gyll.	B	23. 10. 2009

Conclusions - insect as a food

- Need of **Revised Novel Food Regulation**
 - Insect should be a novel food
 - Approach - case by case assessment / authorization
 - Public perception / communication will be essential



Final conclusions

- Food fraud – a new challenge for food safety / quality systems / programs in EU
- International cooperation – only way forward
- Complexity of approaches - pressure on communication quality
- Conflict of interest - issue for organization of food safety systems
- Food safety - closely connected also with food security and nutritional adequacy in societies

