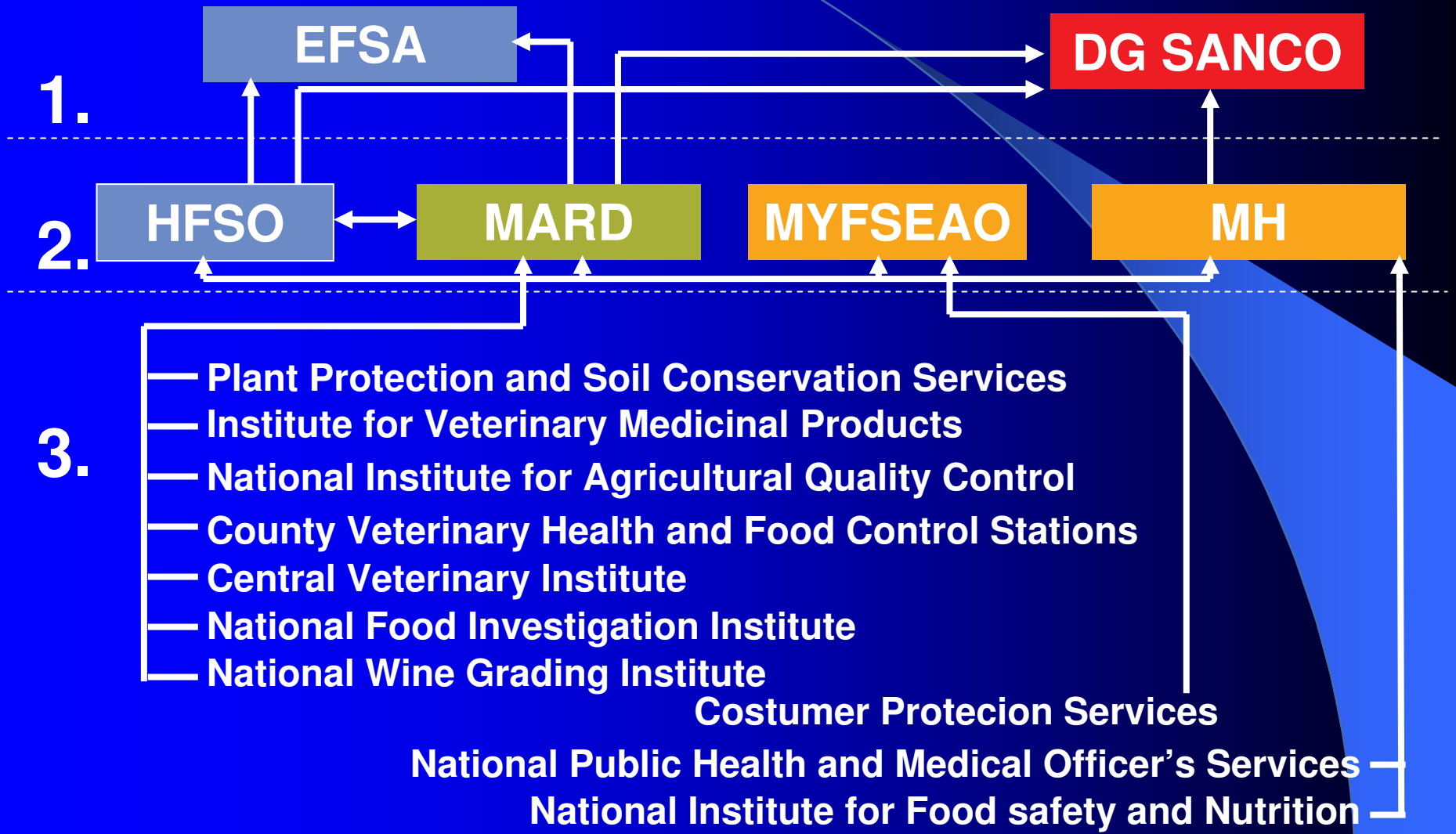
FOOD CONTROL SYSTEM IN HUNGARY

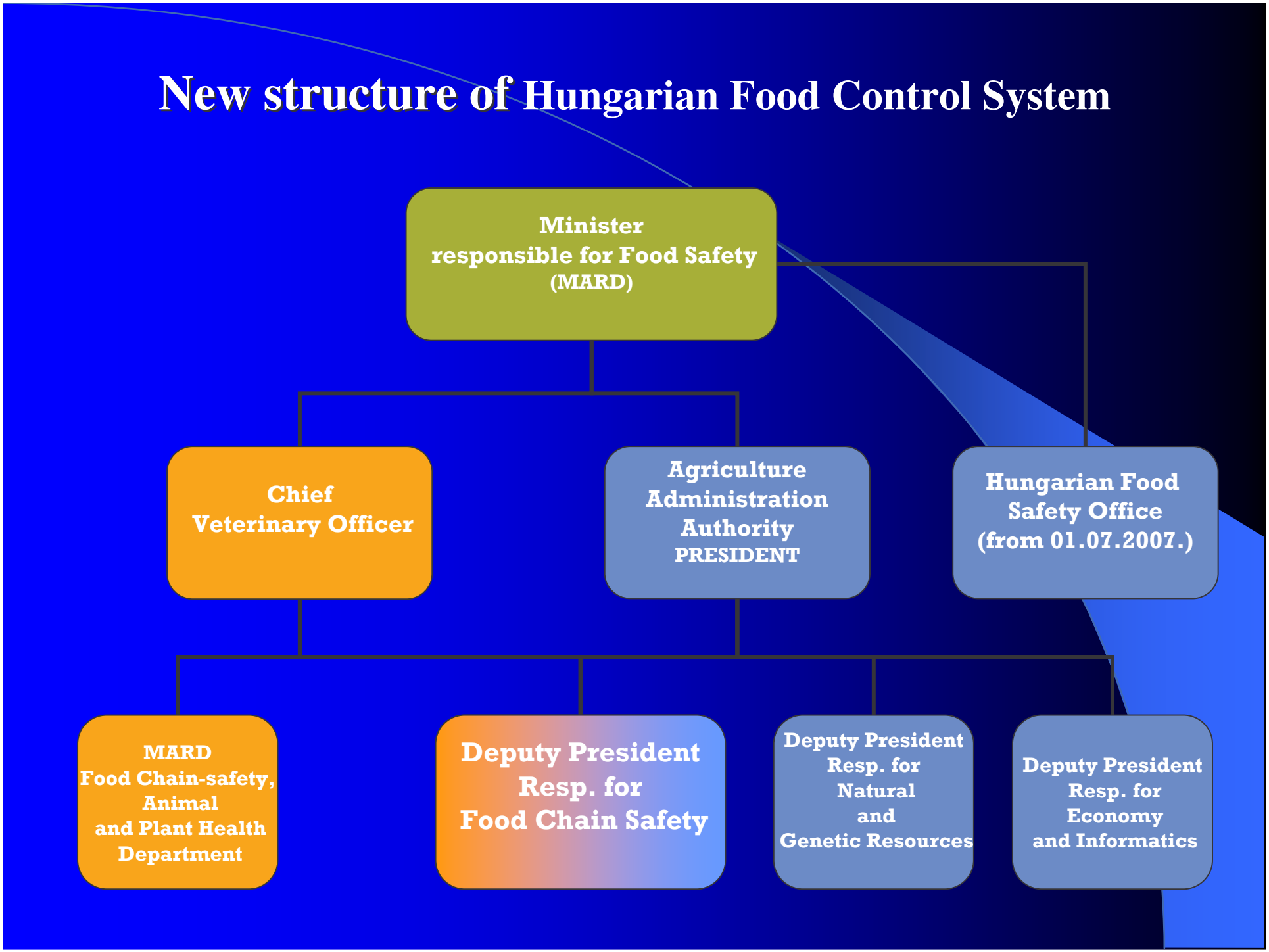
SAFE FOODS SEMINAR

Budapest, 29-30th March 2007.

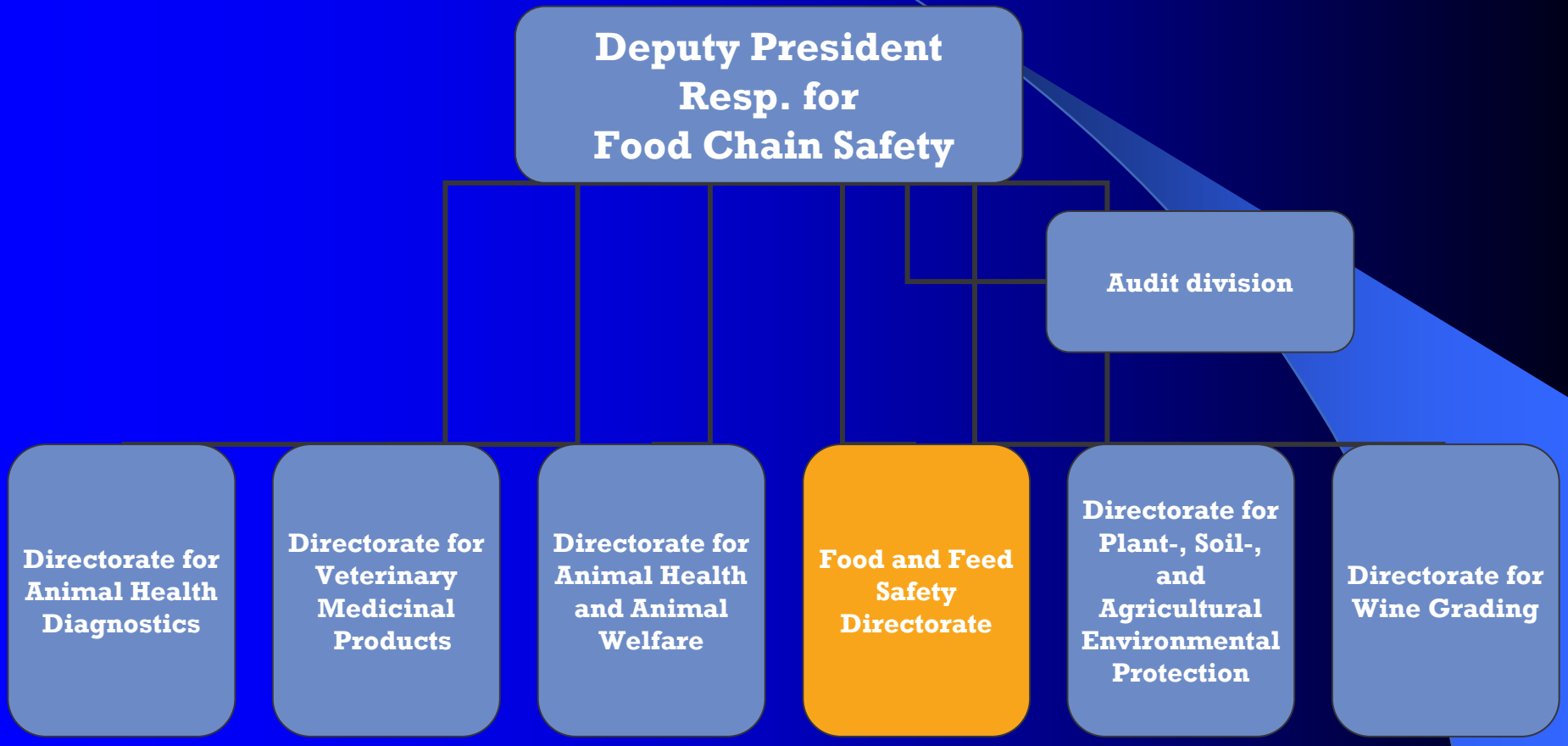
Hungarian Food Control System
Until 31.12.2006



New structure of Hungarian Food Control System



New structure of Food Safety Organization



New structure of Food Safety Organization

Main responsibilities:

- Control and rating of food establishments;
- Registering food producing establishments;
- Carrying out the hygienic suitability tests of machines and equipment used in the food industry;
- Control of safety of food distribution;
- Participation in operation of RASFF;
- Approval of novel food for placing on the market;
- Acting as the second instance authority in case of appeals;
- Official food control;
- Approval of feed establishments and official feed control;
- Operating laboratory monitoring and control tests for food and feed;
- Performing tests on radiochemistry;
- Approval and supervision of operation of laboratories operated by parties other than the state.

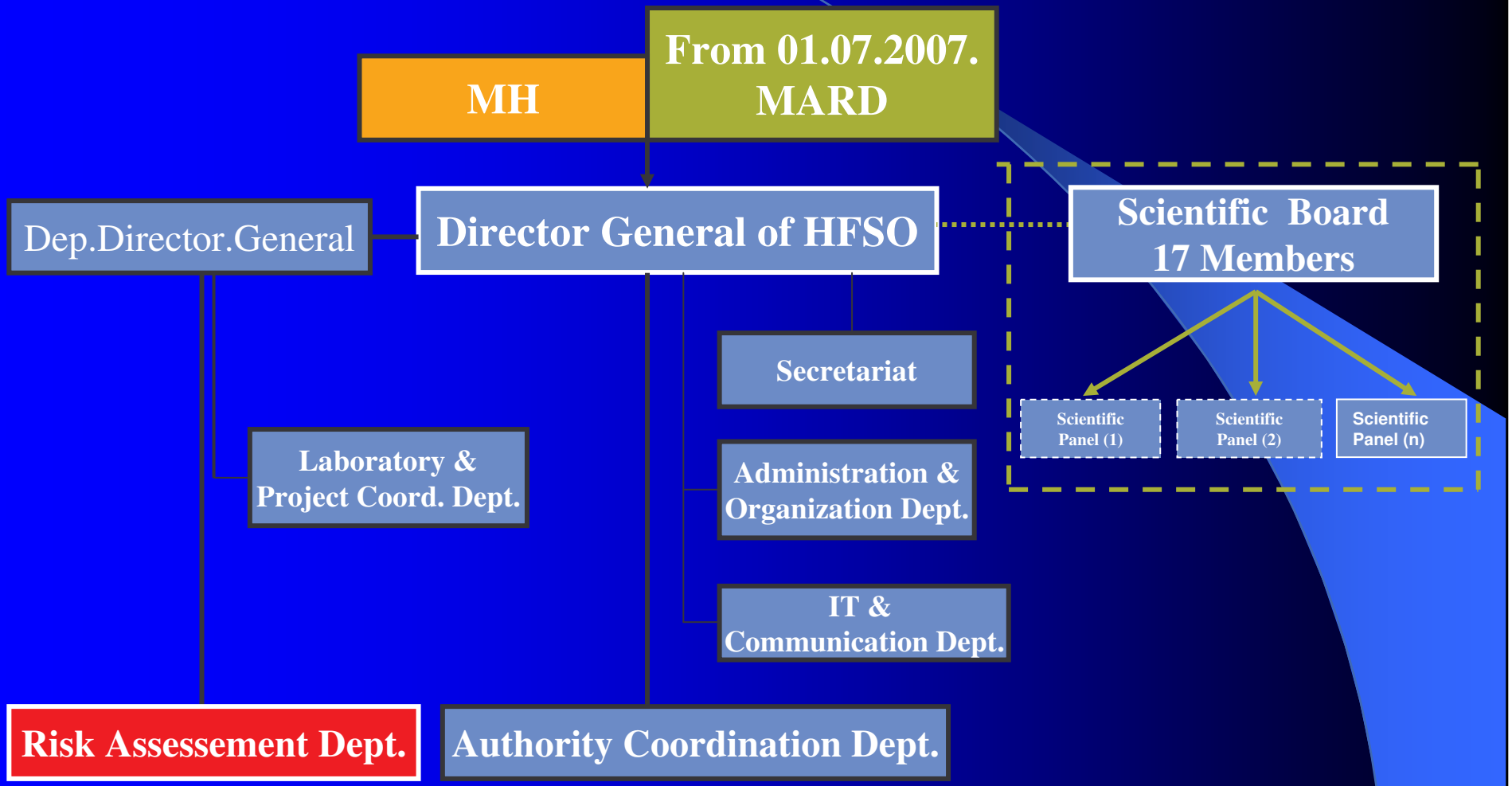
New structure of Food Safety Organization

Regional Organization of MgSzH (Regional Offices)

Baranya County MgSzH	Jász-Nagykun-Szolnok County MgSzH
Bács-Kiskun County MgSzH	Komárom-Esztergom County MgSzH
Békés County MgSzH	Nógrád County MgSzH
Borsod-Abaúj-Zemplén County MgSzH	Somogy County MgSzH
Csongrád County MgSzH	Szabolcs-Szatmár-Bereg County MgSzH
Fejér County MgSzH	Tolna County MgSzH
Budapest and Pest County MgSzH	Vas County MgSzH
Győr-Moson-Sopron County MgSzH	Veszprém County MgSzH
Hajdú-Bihar County MgSzH	Zala County MgSzH
Heves County MgSzH	

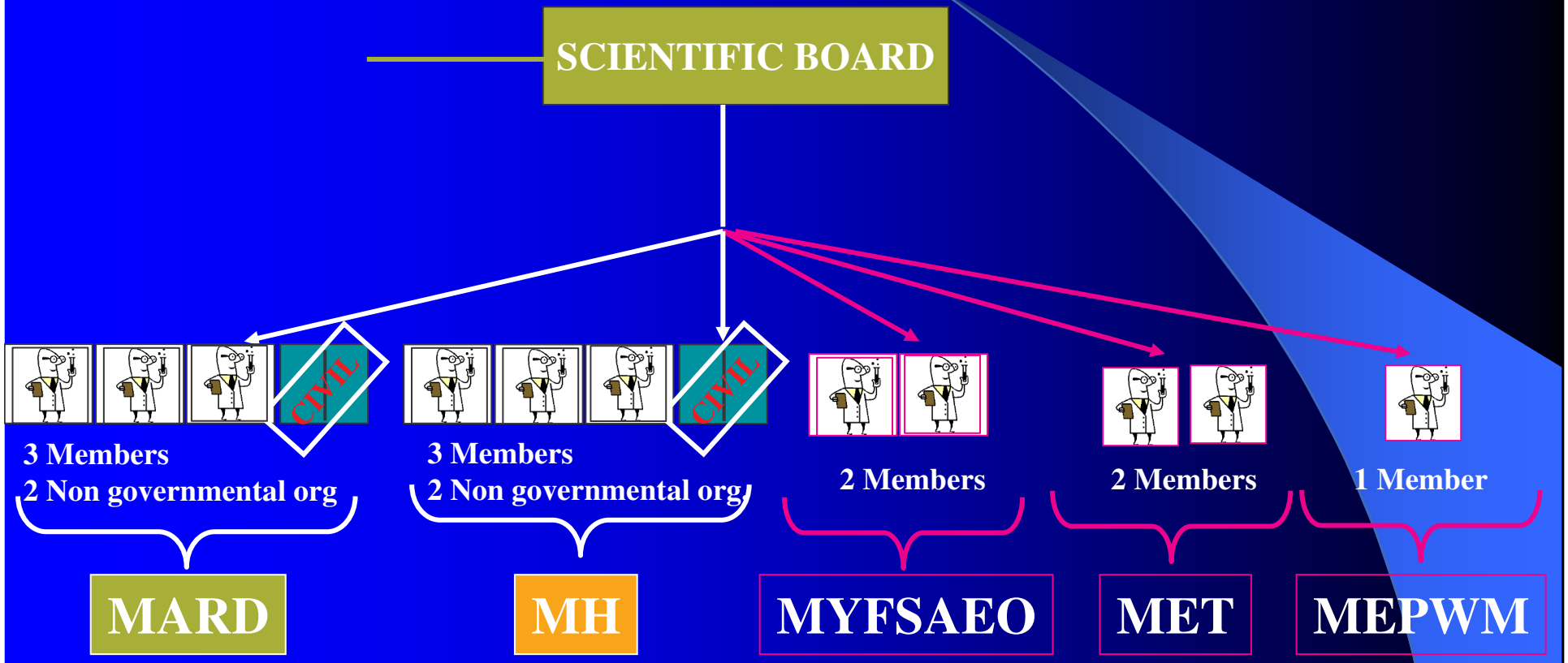
HUNGARIAN FOOD SAFETY OFFICE

ORGANISATION CHART



FOOD SAFETY

ORGANISATION CHART of the SCIENTIFIC BOARD



MARD = Ministry of Agriculture and Regional Development
MH = Ministry of Health
MYFSAEO = Ministry of Youth, Family, Social Affairs and Equal Opportunities
MET = Ministry of Economy and Transportation
MEPWM = Ministry of Environmental Protection and Water Management

HFSO SCIENTIFIC PANELS

	PANELS
1.	**Food additives, flavorings, processing aids and materials in contact with food**
2.	**Additives and products or substances used in animal feed**
3.	**Plant health, plant protection products and their residues**
4.	**Dietetic products, nutrition and allergies**
5.	**Biological hazards**
6.	**GMO**
7.	**Contaminants in the food chain**
8.	**Animal health and welfare**
9.	**Drinking water**

Risk Assessment Process

Based on scientific information

- **hazard recognition**
- **hazard characterisation**
- **exposure possibility**
- **risk characterisation**

Hazardous contamination of food and feed (pesticide residues, heavy metals, toxins, viruses)
Edibility (quantity, frequency, MRL)

Based on the judgement Of Risk Assessment the Risk Management makes decision about the further actions

Interactive process about hazards & risk (Information, opinions) together with the participants of the whole food chain:

- **Risk analyzers**
- **Consumers**
- **Food producers**
- **Feed producers**
- **Scientific boards**
- **Authorities**
- **Whole sellers etc..**

Ochratoxin A in paprika powder

Risk Assessment

Mycotoxins
short review

- Large number of microscopic fungi in nature
- Food impair effect of moulds:
  - reduction in nutritional value
  - organoleptic
  - health hazard due to toxin production
- Mycotoxins: metabolic by-products of fungi
  - not necessary for growth
  - complicated structure
  - high biological activity
- Multiplication of fungi not necessarily means toxin-production!

Mycotoxins
short review

- For toxin-production the followings are needed:
  - appropriate temperature
  - oxygen
  - substrates
  - appropriate water activity
- A specific species is able to produce different toxins
- A specific mycotoxin can be produced by different species

Mycotoxins
short review

- Mycotoxin production is possible through the whole food-chain:
  - soil
  - storage
  - food processing
  - distribution
- Huge variety of mycotoxins, most of them is detected from food
- The most dangerous mycotoxins in foodstuffs:
  - aflatoxins
  - **ochratoxin A**
  - patulin
  - fusarium toxins

Ochratoxins

short review

- Produced by *Aspergillus* and *Penicillium* species
- Di-hydroxi-isocoumarin derivates bounded to b-phenylalanine
- Most important representative: chlorineous ochratoxin A (OTA)
- Occurrence:
  - cereals
    - (P. verrucosum, cold climate)
    - (A. ochraceus temperate climate)
  - coffee (A. ochraceus)
  - legumes (cocoa, soy)
  - grapes (A. carbonarius, large temperature)
  - animal products (blood, milk)

Ochratoxins
short review

- It is produced under temperate climate circumstances as well
- Toxicity:
  - severe
  - target: kidneys
  - carcinogenous in animal experiments
  - immunosuppressive
  - teratogen
  - NOT mutagen
- OTA is able to accumulate
- ADI: 1,2-14 µg/kg
- Stability: heat stable

Possibilities of mycotoxin reduction

- Selection of resistant plants
- Prevention of infection with moulds
- Good Agricultural Practice (GAP)
- Picking and cleaning of raw materials
- Effective control

Toxicological effects of mycotoxins

	Aflatoxin	Aflatoxin M1	Fumonisin	DON	Zearalenone	Ochratoxin A
Carcinogen	✓ liver	✓ liver	✓ esoph.			✓ kidney
Mutagen	✓					
Embryotoxicity				✓	✓	✓
Oestrogen					✓	
Immunosuppressive	✓	✓		✓		✓

Mycotoxins inspected by Hungarian authorities

- Aflatoxin B_1, B_2, G_1, G_2, M_1, M_2
- Ochratoxin A
- Fusarium F_2, T_2
- DON
- Patulin
- Zearalenone

Methods used for inspection of mycotoxins

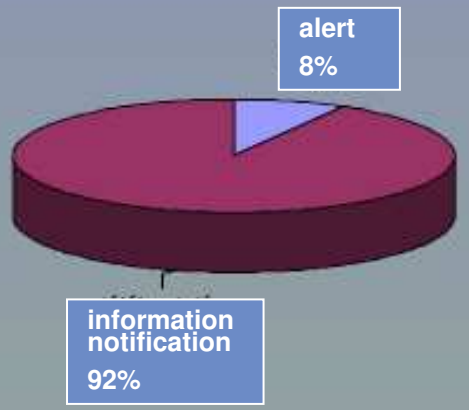
- **Screening methods**
  - **HPTLC**
  - **Enzyme immuneanalytics** (ELISA, immune affinity columns)
- **Confirmative methods**
  - **HPLC** (FLD, kobracel)
  - **GC**
- These methods are able to detect mycotoxins of the order of ppb (μg/kg)

Mycotoxin alert and information notifications in RASFF in EU

Mycotoxin notifications
2000-2006

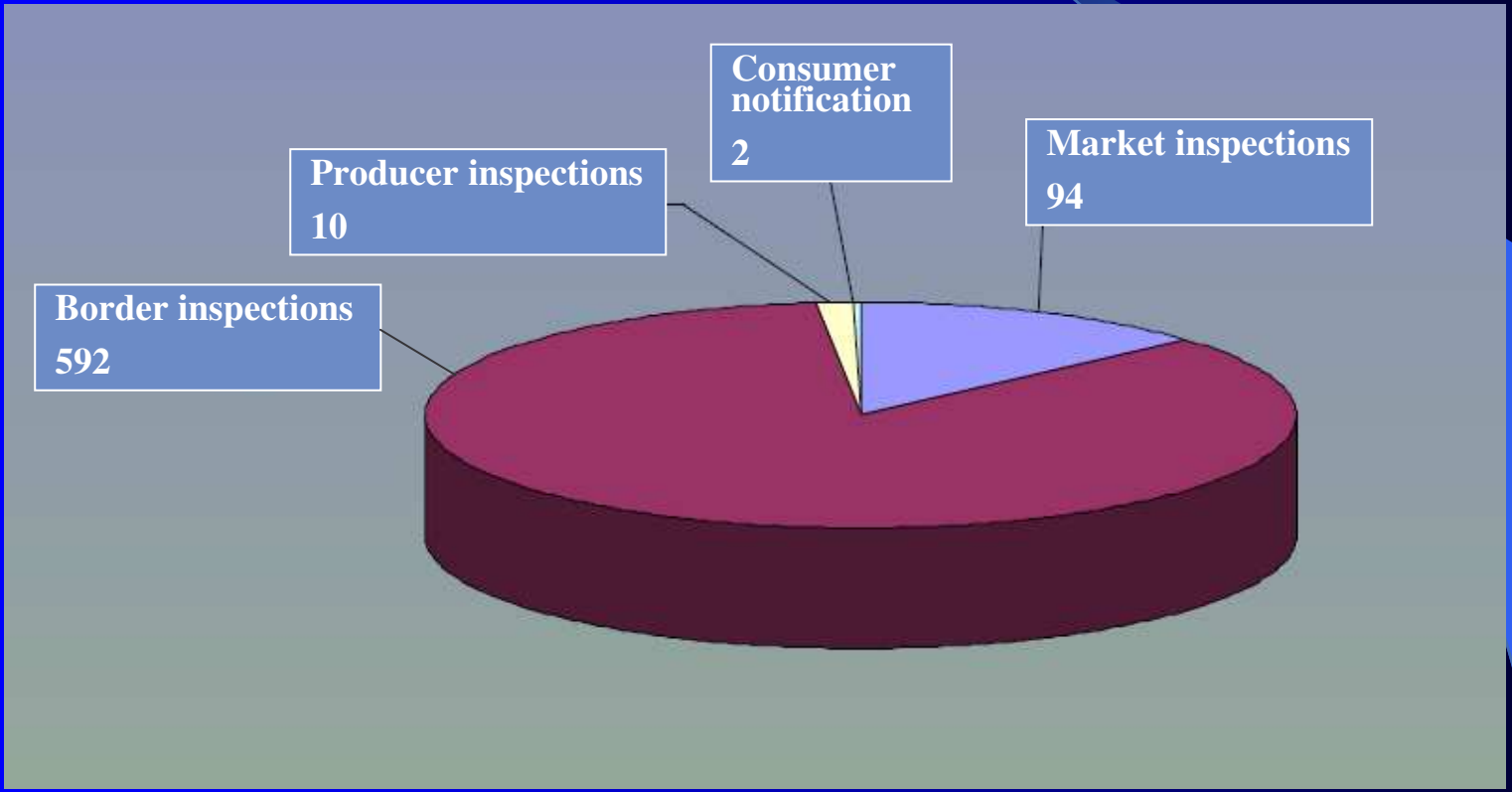
	2000	2001	2002	2003	2004	2005	2006*
alert	24	25	32	35	44	87	59
information	111	163	270	768	834	906	639

Mycotoxin notifications
2006



Mycotoxin notifications in EU

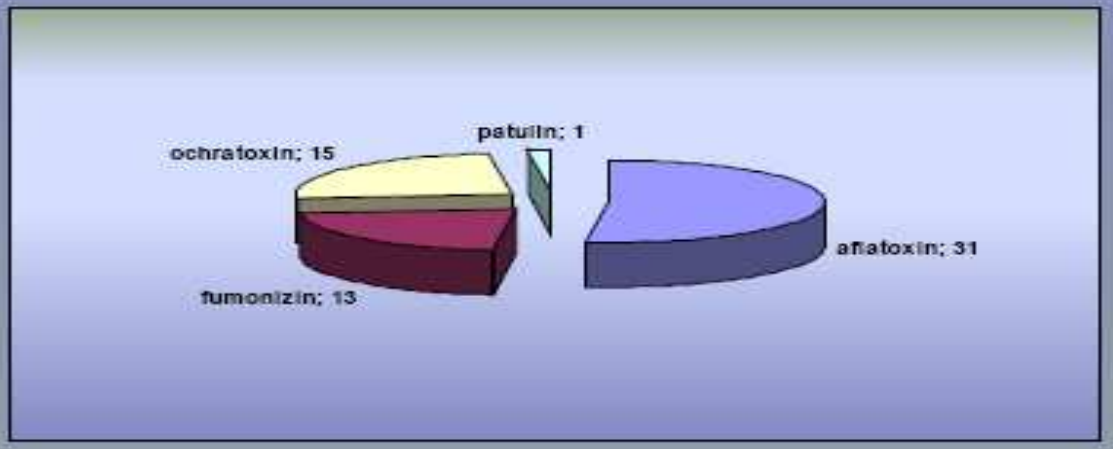
Place of inspections



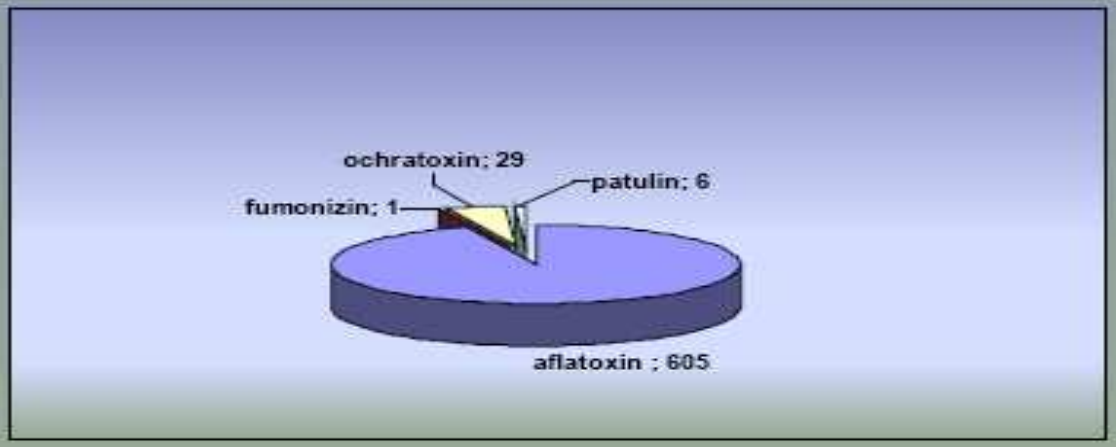
Mycotoxin notifications in EU

Types of toxins

Alert notifications, 2006



Information notifications, 2006



Conclusions
EU RASFF - Mycotoxins

- A high notification number from a specific country indicates their good alert system, and NOT bad food safety.
- Imprecision of data: a specific product can be infected with more mycotoxins – one product-more RASFF notifications
- Most of the mycotoxin notifications refer to 3rd countries
- 80-90% of notifications is information notification
- The main source countries are: Iran, China, India, Brasil, Turkey and Argentina
- 1st place: aflatoxins, mainly from border inspections (BIP)
- 2nd place: ochratoxin, and mainly alert notifications, it means it was detected from products on the EU market (spices and raisins)

OTA MRL in Paprika

Commission Regulation (EC) No 1881/2006 of 19 December 2006 setting maximum levels for certain contaminants in foodstuffs1, establishes maximum levels for, *inter alia*, Ochratoxin A in raw cereals grains, all products derived from cereals and dried vine fruit (currants, raisins and sultanas), roasted coffee, soluble coffee, wine, grape juice, baby foods, processed cereal based foods for infant and young children and dietary foods for special medical purposes intended specifically for infants.

Ochratoxin A MRL in EU
(from 01.03.2007)

Products	Ppb
Raw cereal grains (including raw rice and buckwheat)	**5.0**
All products derived from cereals (including processed cereal products and cereal grains intended for direct human consumption)	**3.0**
Dried vine fruit (currants, raisins and sultanas)	**10.0**
Roasted coffee beans and ground roasted coffee with the exception of soluble coffee	**5.0**
Soluble coffee (instant coffee)	**10.0**
Wine (red, white and rosé) (**) and other wine and/or grape must based beverages Grape juice, grape juice ingredients in other beverages, including grape nectar and concentrated grape juice as reconstituted Grape must and concentrated grape must as reconstituted, intended for direct human consumption	**2.0**
Baby foods and processed cereal-based foods for infants and young children Dietary foods for special medical purposes intended specifically for infants	**0.5**
Green coffee, dried fruit other than dried vine fruit, beer, cocoa and cocoa products, liqueur wines, meat products, spices and liquorice	**-**

The Regulation foresees in the recital 24 that

*"the appropriateness of setting a maximum level for OTA in foodstuffs such as dried fruit other than dried vine fruit, cocoa and cocoa products, **spices**, meat products, green coffee, beer and liquorice, as well as a review of the existing maximum levels , in particular for OTA in dried vine fruit and grape juice, will be considered in the light of the recent EFSA opinion"*

The opinion of the Scientific Panel on Contaminants in the Food Chain from EFSA related to Ochratoxin A in Food has been adopted on 4 April 2006. In view of the abovementioned review, the Expert Committee “Agricultural Contaminants”, as working party of the Standing Committee on the Food Chain and Animal Health, has considered the issue taking into account the conclusions of the EFSA opinion, recent occurrence data and comments made by stakeholder organisations following a wide consultation on possible measures.

Commodities in which OTA has been observed and for which no EU maximum level has yet been established

Criteria used to assess the appropriateness of setting the maximum levels

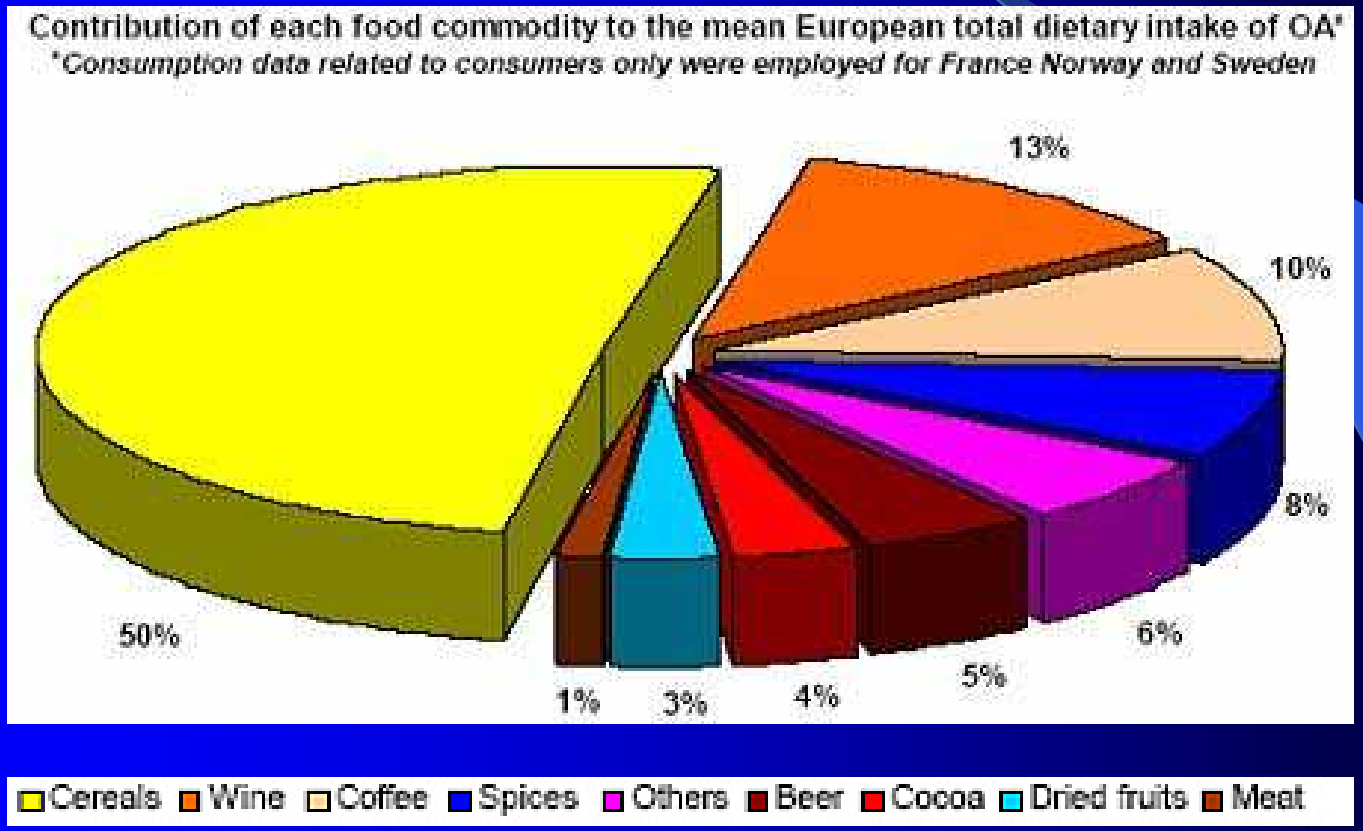
- Maximum levels could be considered for setting for these commodities
  - that are significant contributor to the exposure of OTA (for the whole population, or for vulnerable group of the population, or for significant part of the population) (Criterion 1: SIGNCONT)
  - that are not necessarily a significant contributor to the exposure of OTA but there is evidence that very high levels of OTA in these commodities can be found. A maximum level could be appropriate to be set to avoid that these very highly contaminated commodities could enter the food chain. (Criterion 2: HIGHLEV)

- It is appropriate to continue the monitoring of OTA in foodstuffs for which no maximum levels is set and in case of a frequent finding of unusually high levels of OTA to bring these findings to the attention of the Commission and other Member States in order to initiate the discussion on the appropriateness of setting of a maximum level for OTA in these commodities taking into account these new findings

Commodities for which it is appropriate to pursue the discussions in view of setting a maximum level for OTA at EU level

Products	Ochratoxin A (µg/kg or ppb)
1. Spices Following species of spices: ***Capsicum spp* (dried fruits thereof, whole or ground, including chillies, chilli powder, cayenne and paprika)** *Piper spp* (fruits thereof, including white and black pepper) *Myristica fragrans* (nutmeg) *Zingiber officinale* (ginger) *Curcuma longa* (turmeric) *Syzygium aromaticum* (cloves)	10 – 30* µg/kg The higher level of the range can, if acceptable only applicable for a relative short period with a lower level established applicable from a certain date **(HIGHLEV)**

Total dietary intake of OTA



Source: FAO

Situation in Hungary

- The OTA MRL in paprika in Hungary is 10µg/kg
- The Hungarian paprika producers are able to deal with this MRL
- EU plans are 10-30-50 µg/kg for OTA MRL
- Very high paprika consumption in Hungary (approximately 4 times higher)
- Hungary's plan is to extend 10µg/kg MRL to EU member states
- This standpoint should be confirmed with risk assessment

Risk Assessment of Ochratoxin A in Paprika

Performed by:

Hungarian Food Safety Office

National Institute of Food Safety and Nutrition

- Level of Contamination
  - exceeds the national MRL
- Consumption data
  - 4 times higher than EU average
- Exposure assessment
- Effect of different MRL values on OTA exposure of Hungarian population

Level of OTA Contamination of Paprika in Hungary

- 287 paprika samples (2004-2005)
- Detection of OTA: from 64.1%
- Over 10 µg/kg National MRL: 18.1%
- Extreme contaminations:
  - 284 µg/kg (2004)
  - 247 µg/kg (2005)
- Average contamination:
  - 10.2 µg/kg (2004)
  - 10.0 µg/kg (2005)

Consumption data of paprika in Hungary

- **1.3 g paprika/capita/day** (Bíró, 2005)
- No international data, but:
  - GEMS/Food (WHO, 2006):
    raw chilli consumption in Europe: 3g/capita/day
  - assumption: all chilli is consumed as dried paprika, then after drying the consumption at EU level will be: 0.3g/capita/day
  - WHO: spices consumption: 0.1g/capita/day
- Hungarian per capita consumption is 4 times higher than EU average (or 13 times higher if we choose „spice" consumption data)
- Good correlation with expectations about traditional Hungarian cuisine

Exposure assessment of OTA in paprika in Hungary

- Average consumption: 1.3 g/capita/day
- Average OTA contamination of paprika: 10.1 µg/kg
- Average body weight: 60 kg
- Average exposition:

  0.22 ng/body weight kg/day

  In case of consumption more and/or higher contaminated paprika it can reach:

  5.37-21 ng/body weight kg/day

  what reaches the Tolerably Daily Intake

Exposure assessment of OTA in paprika in Hungary

- Upper limit of OTA exposure:
  - WHO: 100 ng/kg/week
  - EFSA: 120 ng/kg/week
- OTA overall exposure in EU:
  - Netherlands: 1.2 ng/kg/day
  - EFSA: 2.2-3.5 ng/kg/day
- In Hungary the paprika consumption itself reaches the 10-100% of EU average of overall OTA exposure

Effect of different MRL values on OTA exposure of Hungarian population

MRL	No of Samples	Incidence
< 10 µg/kg	235	81.9%
< 15 µg/kg	245	85.4%
< 20 µg/kg	256	89.2%
< 50 µg/kg	273	95.1%
Total	287	100%

Effect of different MRL values on OTA exposure of Hungarian population

- 3.5% of the samples is between 10-15 µg/kg
- 3.8% of the samples is between 15-20 µg/kg
- 5.9% of the samples is between 20-50 µg/kg

- No serious economical loss to producers in case of 10 µg/kg MRL
- Especially because the OTA content of paprika can be reduced easily with GAP and GMP

Effect of different MRL values on OTA contamination level of paprika in Hungary

- Assuming that batches with OTA content over the MRL are excluded from distribution
- The average contamination levels (µg/kg) at average MRL values are presented:

MRL	Average [µg/kg]
< 10 µg/kg	1.53 (100%)
< 15 µg/kg	1.95 (127.5%)
< 20 µg/kg	2.61 (170.5%)
< 50 µg/kg	4.65 (304.1%)

Effect of different MRL values on OTA contamination level of paprika in Hungary

- The hypothetical elevation of present National MRL of 10 µg/kg should cause an outstanding increase in contamination of paprika samples (27.5, 70.5 or even 204%).
- The exposure should increase with the same rate.
- With regard to the fact that
  - paprika is not even taken into acount as an OTA exposure source
  - the paprika amount consumed is added to other, relevant OTA sources
  - a contaminated batch is consumed for long time (according to Hungarian cuisine routine)

high OTA content paprika products impose a high long-term health risk for Hungarian population.

References

Hungarian Food Safety Office

- Ambrus Árpád
- Mészáros László
- Szabó Erika
- Szeitzné Szabó Mária

National Institute of Food Safety and Nutrition

- Sohár Pálné
- Varga Ildikó

Hungarian Agriculture Administration Authority
Food and Feed Safety Directorate

- Ácsné dr Kovacsics Loréna
- Gyetvai Béla
- Marthné Schill Judit

Thank You for your attention!