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# Food Additives – Inspection procedures including laboratory analysis – Experience from government authority point of view

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# Additives – state supervision in the Czech republic

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## Responsibilities of authorities

- Food inspection of food in Czech in competency of two ministries (Agriculture and Health)
- **Czech Agriculture and Food Inspection Authority** (products of plant origin in all stages, foodstuffs of animal origin in retail), subordinate to the Ministry of Agriculture
- **State Veterinary Administration** (products of animal origin), subordinate to the Ministry of Agriculture
- **National Institute of Public Health** (foods in catering), subordinate to the Ministry of Health

# Additives – state supervision in the Czech republic

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# Additives – inspections ensured by Czech Agriculture and Food Inspection Authority (CAFIA)

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Sampling and analysis of food samples are carried out mainly on the basis of

## **Annual plan of inspections**

- serves as base – also other inspections based on the actual needs and impulses

# Additives – inspections by CAFIA

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## **Specific criteria for preparing the annual plan and for decision on inspection to be performed:**

- findings from previous inspections
- data analyses in the Information System
- actual findings of inspectors in the fieldwork
- findings of other public authorities (Sanitary Service, Veterinary Administration, Police, Customs Office, Trade Licensing Office)
- consumer suggestions (complaints)
- suggestions of mass media (press, radio and television) and advertising
- findings of foreign partner organisations, such as: DGCCRF, FIS, FDA, FSA
- European Commission recommendation
- information from RASFF system etc.

# Additives – inspections by CAFIA

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## **RASFF**

### The Rapid Alert System for Food and Feed

- Managed by Directorate-General for Health and Consumers of the European Commission
- Members – EU member states, the Commission as member and manager, European Food Safety Authority also Norway, Liechtenstein, Iceland and Switzerland.
- The legal basis of the RASFF is Regulation EC/178/2002 laying down the general principles and requirements of food law
- The purpose of the RASFF is to provide the control authorities with an effective tool for exchange of information on measures taken to ensure food safety around the Europe.

# RASFF – food additives analysis of trends in 2008

(source: RASFF Annual Report 2008)

food additives	too high content of sulphites	↓							
	undeclared sulphite	↑↑							
	too high content of E 210 - benzoic acid								
	E 452 - polyphosphates	↓↓							
	unauthorised food additives (other)								↑↑
	too high content of colour additives								↓↓
	unauthorised use of colour additives							2005 ↓↑	2005 ↓↑

# RASFF – food additives - notifications in 2008

(source: RASFF Annual Report 2008)

	alcoholic beverages	cereals and bakery products	confectionery	crustaceans	dietetic foods and food supplements	fish	fruit and vegetables	herbs and spices	non-alcoholic beverages	soups, broths and sauces	TOTAL
too high content of colour		1	7			2	1		5		16
too high content (other)	1		1			2	1		8	6	19
too high content of sweetener									4		4
too high content of sulphite			1	18			28				47
unauthorised use of colour		6	13		6		3	4	3		35
unauthorised use (other)	1	2	15	1	2	1	4		7	1	34
unauthorised use of sulphite											0
unauthorised sweetener							1				1
undeclared colour											0
undeclared sulphite			3	20			6			2	31
undeclared (other)											0
unidentified colour			2								2
<b>total</b>	<b>2</b>	<b>9</b>	<b>42</b>	<b>39</b>	<b>8</b>	<b>5</b>	<b>44</b>	<b>4</b>	<b>27</b>	<b>9</b>	<b>189</b>

# Additives – analyzed by CAFIA

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Focus on the additives where maximum limit has been set

- **Preservatives** (benzoic acid, sorbic acid, p-hydroxybenzoates, formic acid, sulphur dioxide, dimethyldicarbonate, propionic acid, nitrates, nitrites)
- **Colours** (amaranth(E123), ponceau 4R (E124), azorubine (E122), sunset yellow (E110), tartrazine (E102), quinoline yellow (E104), indigo carmine (E132), brilliant blue FCF (E133), brilliant black BN (E151), erythrosine (E127), Allura red (E129), patent blue (E131), green S (E142), red 2G (E128) – artificial, annato (E160b), carminic acid (E120), carotenoids (E160a) – natural, sudan dyes – non permitted)
- **Sweeteners** (saccharine, aspartame, acesuphame K, cyclamate, neohesperidine DC, polyols), sucralose
- **Other** – polyphosphates, glutamate, acids, antioxidants (BHT, BHA, gallates, TBHQ, erythorbic acid)....

# Additives – analysis

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Requirement – official control laboratories shall be accredited according to standard EN ISO/IEC 17025

Priority to use standardised methods of analysis (EN, ISO, Codex, (AOAC)) – advantage for the case of dispute

☞ but not always available (internal methods – internally validated proved in proficiency testing schemes)

# CEN standardized methods of analysis available

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- EN 12856 - HPLC determination of saccharine, aspartame and acesulphame K
- EN 12857 - HPLC determination of cyclamate
- CEN/TS 14537 - HPLC determination of neohesperidine DC
- EN 15086 - HPLC determination of polyols
- ISO 5553 – TLC determination of polyphosphates
- EN 12014-3 - Spectrometric determination of nitrate and/or nitrite content
- EN 12014-4 - Ion-exchange chromatographic (IC) method for the determination of nitrate and nitrite
- EN 1988-1 - Determination of sulfite - Part 1: Optimized Monier-Williams method
- EN 1988-2 - Determination of sulfite - Part 2: Enzymatic method

# CEN standardized methods of analysis available

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- EN 1376+AC - Determination of saccharin in table top sweetener preparations - Spectrometric method
- EN 1377+AC - Determination of acesulfam K in table top sweetener preparations - Spectrometric method
- EN 1378+AC – HPLC determination of aspartame in table top sweetener preparations
- EN 1379+AC – HPLC determination of cyclamate and saccharin in liquid table top sweetener preparations
- P CEN/TS 15606 – HPLC determination of acesulfame-K, aspartame, neohesperidine-dihydrochalcone and saccharine

# Additives – analysis

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## Technics used in CAFIA

- TLC – only qualitative determination or screening – quantification by HPLC after; or detection unauthorised use or undeclared additives
- HPLC different detections – most frequently UV/VIS or DAD – quantitative detection (confirmation)
- Spectrophotometry
- (LC-MS – only exceptionally)

# Additives – analysis

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## Interpretation of the results of analysis

### Reasons for non-compliance

- limit exceeded (uncertainty of measurement should be taken into account)- (limits set in EU acts)

result reported:  $R \pm U$

example:  $116 \pm 20$  mg/kg (limit 100 mg/kg)

- unauthorised use (additive is not permitted in EU acts for certain foodstuffs)
- additive is permitted but not declared

# Additives – CAFIA results 2009

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Additives	Total number of samples	Non-compliant samples
Colours	557	51 (9,2%)
Preservatives	1171	64 (5,5%)
Sweeteners	64	0
Total	2190	114 (5,2%)

# Additives – CAFIA results 2009

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## Non-compliant samples

- colours (low quality wines, confectionery, processed fruit, soft drinks, food supplements)
- 📖 most of cases – colour not declared on labelling
- 📖 6x - not permitted colouring of wine (semifermented wine)
- 📖 7x – limit exceeded – all confectionary products

# Additives – CAFIA results 2009

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## Non-compliant samples

- preservatives (low quality wines, salads, processed fruit, soft drinks, crackers)
  - most cases (52) wine (limit exceeded)
  - 📄 12 cases sulfur dioxide – 6x not declared (alergen!), 6x – limit exceeded
- Others
  - 📄 polyphosphates (not declared) – frozen fish
  - 📄 citric acid (not declared) – frozen fish

# Additives – CAFIA last case

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## Formic acid

- EU unauthorised preservative
- found in imported sauerkraut labelled as „without preservatives“  
necessary to assess
- whether formic acid could not be naturally present



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Thank you for your attention