# *Pesticide Residues in Products of Plant Origin - Report for the Czech Republic 2004*

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## 1 Monitoring system of food in the Czech Republic

Responsible authority for pesticide residues monitoring and control in food is Czech Agriculture and Food Inspection Authority (CAFIA). It provides the national and EU co-ordinated monitoring programmes in co-operation with the Ministry of Agriculture [1].

The sampling plan for pesticide residues monitoring is always drawn up for one calendar year. The plan is elaborated by the Headquarters of CAFIA as internal provision and it is distributed to the CAFIA regional inspectorates, which are responsible for its implementation. The plan is based on Commission Recommendation concerning a coordinated Community monitoring programme which sets the minimum number of samples for the Czech Republic. Within the monitoring of pesticide residues, the Czech Republic analyses approximately 800 samples per year. Within pesticide residue monitoring, especially commodities mainly presented in the consumer basket are collected. In selection of commodities for the monitoring a number of findings in the past (in the Czech Republic and other member states) is also taken into account. Fresh fruit, vegetables and baby food comprise the primary proportion of samples taken [1].

Sampling is based on the principles of the risk assessment:

- excise patterns of the commodity
- risk rate of the commodity
- risk rate of the pesticide
- volume of the production
- new foodstuffs on the market

Selection of food samples is also carried out according to this criteria:

- knowledge from previous controls
- data analysis in the information system
- topical findings of the inspectors
- findings of other authorities (hygienists, veterinary screenings, police etc.)
- incentives of consumers
- incentives of media and advertisements
- findings of abroad control authorities
- EC recommendations
- information of the rapid warning system (RASFF)

## 2 Results of the residue monitoring in 2004

In 2004, 723 plant origin samples were analysed as a surveillance monitoring, 130 samples from that amount were EU - coordinated monitoring and 593 samples belonged to national monitoring programme. Except this, 68 samples were taken as a follow up enforcement sampling. Since surveillance monitoring results are stated as official results for the Czech Republic [2], follow up enforcement sampling will not be taken into consideration in further text.

The origin and number of samples of surveillance monitoring are shown in tab. 1 and picture 1. In the samples, 119 pesticides were sought and 64 found [3].

*Tab. 1.: The origin and number of samples of surveillance monitoring in the Czech Republic [3]*

| | domestic products | domestic products [%] | other EU MS products | other EU MS products [%] | products imported from TC | products imported from TC [%] | total |
|---|---|---|---|---|---|---|---|
| **Fresh products of plant origin, incl. fruit, vegetables** | 138 | 22.55 | 357 | 58.33 | 117 | 19.12 | 612 |
| **Cereals** | 17 | 60.71 | 7 | 25.00 | 4 | 14.29 | 28 |
| **Processed products (except baby food)** | 22 | 62.86 | 11 | 31.84 | 2 | 5.71 | 35 |
| **Baby food** | 27 | 56.25 | 21 | 43.75 | 0 | 0.00 | 48 |
| **total** | 204 | 28.22 | 396 | 54.77 | 123 | 17.01 | 723 |

EU MS – European Union Member States
TC – Third Countries

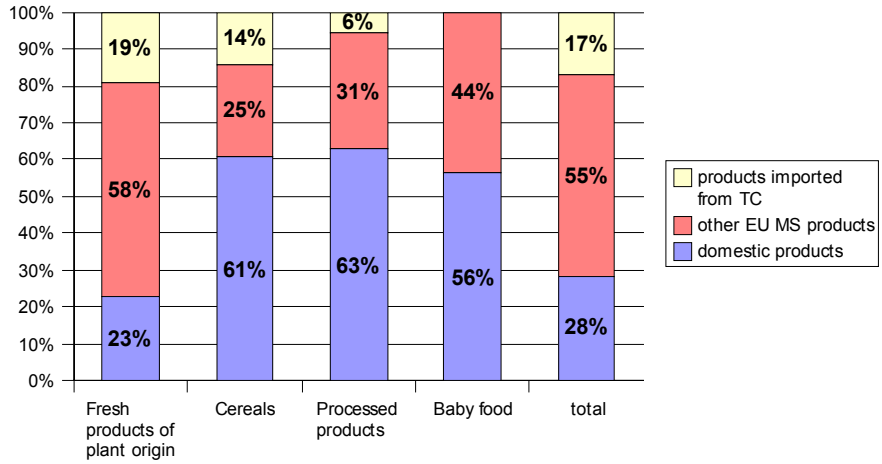


*Figure 1: The origin of surveillance monitoring samples in the Czech Republic [3]*

Residue results are summarised in tab. 2 and picture 2. Pesticide residues were not detected in 59 % of foodstuff samples. The residue level at or below the MRL was found in 39 % of samples. 2 % of samples contained residues above the MRL [3]. This results are similar to European monitoring results (data from 2002 - 15 EU countries, Norway, Iceland and Liechtenstein), where 42 % samples of fruit, vegetable, cereals and processed food were contaminated by pesticide residues. From that amount 5.1 % was above the MRL [4].

Fresh fruit and vegetables have the highest share on the MRL exceeding. The most problematic commodity is citruses. Pesticides above the detection limit were found almost in 99 % of citrus samples [5].

The most often found pesticides in food (pesticides found in more than 3 % of analysed samples) are in tab. 3. Critical combinations of commodities and residues, where MRL was exceeded, are in table 4.

*Tab. 2: Results of the surveillance monitoring in the Czech Republic [3]*

| | samples without detectable residues | samples without detectable residues [%] | samples with residues with or below MRL | samples with residues with or below MRL [%] | samples with residues exceeding the MRL | samples with residues exceeding the MRL [%] |
|---|---|---|---|---|---|---|
| **Fresh products of plant origin, incl. fruit, vegetables** | 327 | 53.43 | 273 | 44.61 | 12 | 1.96 |
| **Cereals** | 26 | 92.86 | 2 | 7.14 | 0 | 0.00 |
| **Processed products (except baby food)** | 31 | 88.57 | 4 | 11.43 | 0 | 0.00 |
| **Baby food** | 42 | 87.50 | 3 | 6.25 | 3 | 6.25 |
| **total** | 426 | 58.92 | 282 | 39.00 | 15 | 2.07 |

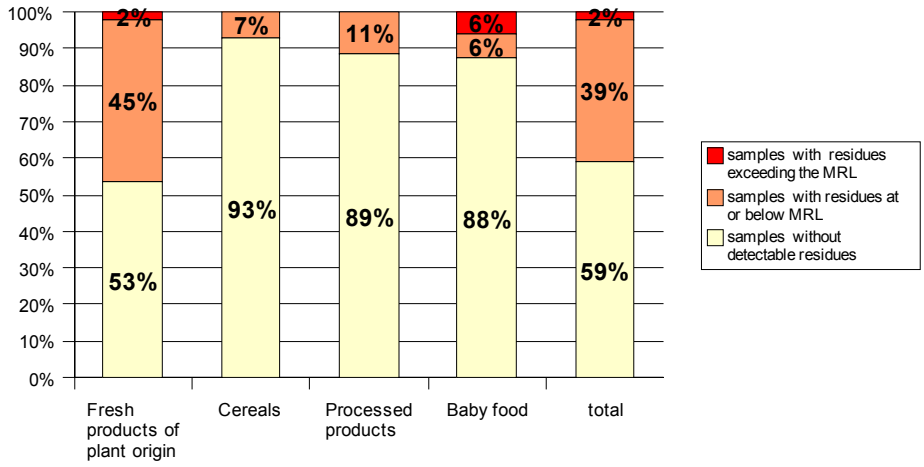


*Figure 2: Results of the surveillance monitoring in the Czech Republic [3]*

*Tab. 3: The most often found pesticides (in more than 3 % of analysed samples) [5]*

| Pesticide | % of samples (related to samples analysed for the pesticide) |
|---|---|
| O-fenylfenol | 66.2 |
| Bromide | 33.3 |
| Maneb group | 17.9 |
| Imazalil | 12.5 |
| Carbendazim | 11.1 |
| Thiabendazole | 10.8 |
| Ethephon | 5.3 |
| DDT (sum) | 4.9 |
| Procymidon | 4.1 |
| Chlormequat | 3.9 |
| Chlorpyrifos | 3.6 |
| Endosulfan (sum of isomers) | 3.2 |

*Tab. 4: Critical combinations commodity/residue, where MRL was exceeded [3]*

| Food item | Pesticide | Residue [mg/kg] | MRL [mg/kg] | Country of origin |
|---|---|---|---|---|
| Strawberries | Cyromazine | 0.25 | 0.05* | Spain |
| Parsley | DDT | 0.49 | 0.05* | Czech Republic |
| Beans | Endosulfan (sum of isomers) | 0.19 | 0.05* | Spain |
| Cucumbers | Endosulfan (sum of isomers) | 0.06 | 0.05* | Spain |
| Cucumbers | Endosulfan (sum of isomers) | 0.10 | 0.05* | Spain |
| Beans | Chlorpyrifos | 0.13 | 0.05* | Egypt |
| Oranges | Chlorpyrifos | 0.46 | 0.30* | Spain |
| Peppers | Pirimiphos-methyl | 1.15 | 1.00* | Spain |
| Oranges | Procymidon | 0.03 | 0.02* | Spain |
| Leek | Tebuconazole | 0.08 | 0.01** | France |
| Lettuce | Tolylfluanid | 0.13 | 0.10** | Belgium |
| Carrot | Linuron | 0.24 | 0.20** | Netherlands |
| Carrot | Dieldrin | 0.02 | 0.01* | Czech Republic |
| Rice | Permethrin | 0.07 | 0.05* | Czech Republic |

* - EC-MRL
** - national MRL

Multiple residues – samples with more than one pesticide found, are summarised in tab. 4. Multiple residues were found in 36.7 % of analysed samples.

*Tab. 4: Multiple residues [3]*

| number of pesticide residues found | number of samples | % of total samples |
|---|---|---|
| 2 | 117 | 16.18 |
| 3 | 68 | 9.41 |
| 4 | 42 | 5.81 |
| 5 | 22 | 3.04 |
| 6 | 8 | 1.11 |
| 7 | 7 | 0.97 |
| 8 | 1 | 0.14 |
| total number of samples with multiple residues (>=2): | 265 | 36.65 |

## 3 Abbreviations

CAFIA - Czech Agriculture and Food Inspection Authority

EU – the European Union

EC – European Committee

MRL – Maximum Residue Limit

## 4 References


1. Czech Agriculture and Food Inspection Authority - www.szpi.gov.cz/eng/default.asp
2. Czech Agriculture and Food Inspection Authority: Report of Pesticide Residue Monitoring Results of the Czech Republic for 2004. Available at: http://www.szpi.gov.cz/eng/documents/article.asp?id=57821&cat=2200&ts=6ec46
3. Czech Agriculture and Food Inspection Authority: Report of Pesticide Residue Monitoring Results of the Czech Republic for 2004.Tables according to EU reporting format - available to download at: http://www.szpi.gov.cz/eng/documents/article.asp?id=57821&cat=2200&ts=6ec46 (at the bottom of the page)
4. Monitoring of Pesticide Residues in Products of Plant Origin in the European Union, Norway, Iceland and Liechtenstein. 2002 Report - Summary. EC – Health & Consumer Protection Directorate. April 2004. Available at: http://ec.europa.eu/food/fs/inspections/fnaoi/reports/annual_eu/index_en.html
5. Drápal, J., Ettlerová, K., Hajšlová, J., Hlúbik, P., Jechová, M., Kozáková, M., Malíř, F., Ostrý, V., Ruprich, J., Sosnovcová, J., Špelina, V., Winklerová, D.: Rezidua pesticidů v potravinách, Státní zdravotní ústav. Brno. 2005, 29 p. Code of the document: VVP:PEST/2005/1/deklas. Available (in Czech) at: http://www.chpr.szu.cz/vedvybor/dokumenty/studie/pest_2005_1_deklas.pdf