

## EU AND ANNUAL PESTICIDE CONTROL

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### ABSTRACT

Annually over 45 000 samples are analysed in the EU countries. In 2000 from the samples 3.4 % were confirmed to have residues above EC-MRLs. Inspections and monitoring are carried out in accordance with pesticide directives and the directive of official control of foodstuffs. Besides national monitoring programmes, the Commission has recommended the Member States to participate in specific EU coordinated annual monitoring programmes. A systematic statistical approach of numbers of samples to be taken in each coordinated monitoring exercise is necessary. At least 459 samples should be taken across the Community. Collection of samples should be apportioned between Member States on the basis of population and consumer numbers, with a minimum of 12 samples per product and per year. Number of samples of each product to be taken varies from 12 to 93 samples in 2003. The aim of these kinds of programmes is to work towards a system, which makes it possible to estimate actual dietary pesticide exposure. Eight products and 42 pesticides are selected each year for this coordinated program. Each pesticide should be monitored in 20-30 food products over a series of three-year cycles. Multi-methods capable of detecting up to 100 or more pesticides can be used but also other methods are needed. Draft guidelines concerning "Quality Control Procedures for Pesticide Residue Analysis", have been published by the Commission. These guidelines should be implemented by the analytical laboratories of the Member States. All monitoring results both under national and the EU coordinated programmes are reported annually to the Commission. The reports should be produced in a special format – including the electronic format. The formats have been developed to supply the data in a diskette format. The Commission is required to compile and collate this information. In the reports the criteria applied in drawing up national inspection programmes, should be specified. Information should include the numbers of samples to be taken and analyses to be carried out including reporting levels of pesticides. Details of accreditation of the laboratories carrying out analyses should be indicated.

### IZVLEČEK

#### EU IN LETNI NADZOR NAD FITOFARMACEVTSKIMI SREDSTVI

V deželah EU letno pregledajo več kot 45.000 vzorcev. Inšpekcijski nadzor in monitoring se izvaja v skladu z direktivami o pesticidih in z direktivo o uradnem nadzoru nad živilih. Poleg nacionalnih programov monitoringa, je Evropska komisija državam članicam predlagala sodelovanje v letnih programih monitoringa, ki jih koordinira EU. Število vzorcev, ki jih je potrebno odvzeti znotraj posameznega monitoringa, se določi na osnovi statistike. Znotraj EU je potrebno odvzeti najmanj 459 vzorcev. Skupno število vzorcev mora biti porazdeljeno med članicami glede na populacijo in število potošnikov, a najmanj 12 vzorcev enega proizvoda na leto. Število vzorcev vsakega proizvoda, ki jih je potrebno vzeti, je od 12 do 93 vzorcev v letu 2003. Namen tovrstnih programov je, da ocenimo dejansko vsebnost ostankov fitofarmaceutskih sredstev (FFS) v živilih. V ta program je vsako leto vključenih 8 proizvodov in 42 FFS. V 3-letnem ciklusu mora biti vsako FFS nadzorovano v 20-30 živilih. Za ta namen se lahko uporabi multimetode - »Multi-methods«, ki lahko zaznajo 100 in več FFS, potrebne pa so še druge metode. Evropska komisija je izdala osnutek smernic na osnovi »Quality Control Procedures for Pesticide Residue Analysis«. Analitični laboratoriji dežel članic bodo smernice dopolnili in izboljšali. O vseh rezultatih monitoringov, ki so koordinirani na nacionalni ravni ali na ravni EU, je treba letno poročati Evropski komisiji. Poročila morajo biti izdelana v posebni obliki, vključno z elektronsko obliko ali na disketah. Omenjena komisija podatke zbere in jih primerja. Iz poročila mora biti razvidno, po katerih kriterijih je bil izveden nacionalni monitoring. Prav tako mora biti razvidno število odvzetih vzorcev in opravljene

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analize, ter podatki o vsebnosti ostankov FFS. Natančno je potrebno opisati postopke akreditacije laboratorijev, ki opravljajo analize.

## 1 INTRODUCTION

The latest report “Monitoring of Pesticide Residues in Products of Plant Origin in the European Union, Norway, Iceland and Liechtenstein” from 2000 covers the national situations. The document gives only an overall view on monitoring of pesticide residues. More detailed information about the situation in individual countries is available from the respective national monitoring authorities and their annual reports.

The legal base for pesticide monitoring is based on legislation. Council Directives 86/362/EEC and 90/642/EEC, as amended, are fixing the maximum residue limits for products of plant origin. Inspections and monitoring should be carried out in accordance with the provisions of Council Directive 89/397/EEC on the official control of foodstuffs, and Council Directive 93/99/EC on additional measures concerning the official control on foodstuffs. Sampling has been carried earlier out in accordance with Council Directive 79/700/EEC and in this year a new Directive 2002/63/EC. The Commission services give annual Recommendation (2000/43/EC) to member states of the participation in a specific EU coordinated monitoring programme. The aim is to work towards a system, which makes it possible to estimate actual dietary pesticide intake throughout Europe. The rolling monitoring programme covers in a series of 5 years all major pesticide commodity combinations. The first cycle was completed with 2000 data. The major components have been selected on the basis of the Standard European Diet of the WHO. Reporting from member states is compulsory and the Commission is required to compile and collate this information annually.

## 2 MONITORING RESULTS FOR 2000

The results of the 18 national monitoring programmes were compiled. In total about 45000 samples were analysed for, on average, 151 different pesticides. Analysis is usually performed by multi-methods, capable of detecting up to 100 or more pesticides. Thus at least 4.5 million individual determinations were carried out.

Table 1: Samples taken to monitoring in 2000

Type of sample	Number of samples	%
Fresh fruits, vegetables and cereals	43 219	96
Processed products	1 794	4.0
Surveillance samples	42 631	94
Follow-up enforcement samples	2 583	5.7
Total	45 213	

Surveillance sampling means that samples are collected without particular suspicion towards a particular producer, consignment, etc.. Surveillance sampling may also include more targeted samples, which are directed to a special problem. Follow-up enforcement sampling means that samples are taken in case of suspicion as a follow-up for previously found violations. Follow-up enforcement sampling is directed to a specific grower/producer or to a specific consignment.

Table 2: Pesticide monitoring results in 2000

%	Results and legislation
61	No detectable pesticide residues
35	Residues at or below the MRLs
4.3	Residues exceeded MRLs (national or EC-MRLs)
3.2	Residues exceeded EC-MRLs

The results varied significantly between the different countries. There are real differences in actual presence of residues in member countries. However, differences in monitoring programmes are the main reason of variation. Several factors can cause differences in monitoring programmes: selection of analysed pesticides, sampling, analysing methods, analytical capabilities of laboratories. Sometimes definition of exceeded levels is different as well as national MRLs.

The eighteen national programmes for pesticide residues on fresh (incl. frozen) fruit, vegetables and cereals, sum of surveillance and enforcement samples contained totally 43419 samples. From those samples 3.2 % were confirmed to have residues above EC-MRLs. The more targeted nature of the follow-up enforcement sampling leads to a higher number of MRL exceedances (8.7 compared to 2.9 in the surveillance sampling).

### 2.1 Results of the 2000 compared to the previous years

The percentage of samples with no detectable residues has remained at the same level during years 1996-1998 and 2000 (60-61%), whereas it increased in 1999 to 64 %. Number of samples with residues below or at MRLs (national or EC-MRL) varies. In 2000 percentage was 35% and lower, compared to the 36% - 37% found 1996-1998, but higher than in 1999 (32%). The percentage of samples with residues above MRL (national or EC-MRL) has increased slightly. In 1996-1998 were found 3.0-3.4% exceedances, 1999 (4,3%) and 2000 (4.5%).

A number of different factors have contributed to this evolution and especially to the increase in samples exceeding the MRL. As earlier mentioned the national monitoring programmes differ considerably from year to year. One reason may be Rapid Alert System for Food and Feed. The more information about infringements is available, the countries can target their sampling to more potential problems. The quality of the analytical laboratories is constantly improving towards lower detection and reporting limits. One factor is also the changes of legislation. More MRLs have been set to the Limit of determination.

## 3 OTHER INFORMATION

The Commission report contains a lot of other interesting information e.g. lists of frequently found pesticides and samples with multiple residues. The EU coordinated monitoring exercise is detailed reported and the result evaluated statistically. It also contains evaluation by pesticide for all twenty pesticides included in the monitoring exercise. Residues have been evaluated also on commodity bases and by country. In 2000 for the second time a special exercise was carried out to determine the distribution of pesticide residues in the individual sample units taken from commercial trade. Based on

homogeneity exercise so called “homogeneity factors” were calculated for 20 composite samples.

To estimate the chronic risk to consumers eating the commodities investigated in the EU coordinated programme exposure was assessed. Calculations were based on consumption figures from the WHO (Standard European Diet). The intake of pesticide residues did not exceed the ADI in any case. It was below a percentage of 6.4 % of ADI for all pesticides. Acute exposure has not yet universally accepted methodology. Exposure assessment for the acute risk from the pesticides was investigated also in the 2000 coordinated programme. The assessment was based on the products with the highest residues found in a composite sample in the EU. Food consumption was taken from the UK consumers. The worst case scenario revealed that the intake of methamidophos on cucumbers was 80 % of the acute RfD for adults (70.1 kg) and 330 % for toddlers (14.5 kg). Other exposure assessment models gave also high exposure to toddlers. In all those calculations the intake of methamidophos via cucumbers exceeded the ArfD for toddlers, but not for adults. However, it should be noticed that the finally established acute Reference Dose for methamidophos is not yet available.

Document has summary on sampling. Information is taken from the national one page summaries. Quality assurance information contains data on accreditation, participation in proficiency tests and implementation of the EU Quality Control Procedures of the pesticide residue laboratories. At the end of report Rapid Alert System for Food and Feed (RASFF) and pesticide notifications are referred.

#### **4 CONCLUSIONS**

The coordinated program “Monitoring of Pesticide Residues in Products of Plant Origin in the European Union, Norway, Iceland and Liechtenstein” has strong legal bases. The monitoring system has started in 1996 and developed into a systematic and efficient tool for the pesticide monitoring. The monitoring system is guided from the Commission and results are reported. This very detailed reporting can be used for planning national pesticide monitoring programmes. The results of the monitoring programme can also be used in the future for exposure assessment at European level. Exposure assessments, with more refined methods can be used at the national level.

#### **5 REFERENCES**

- SANCO/687/02 final. Monitoring of Pesticide Residues in Products of Plant Origin in the European Union, Norway, Iceland and Liechtenstein, 2000 Report.
- SANCO/11/2003. Guidance for Reporting the Results of the 2002 National and Community Monitoring Programmes to the European Commission. January 2003 final.