2008 Annual Report on Pesticide Residues according to Article 32 of Regulation (EC) No 396/2005

Adopted: 15 June 2010

The report gives an overview of the control activities performed by EU Member States and EFSA countries in order to ensure compliance of food with the standards defined in European legislation on pesticide residues.

2008 was an important year for the harmonisation of the Maximum Residue Levels (MRLs) for pesticides at European level. Whereas before 1 September 2008 a mixed system with harmonised Community MRLs for *ca.* 250 active substances and national MRLs for the remaining substances was in place, after this date harmonised MRLs became applicable for all active substances used in plant protection products that have the potential to enter the food chain.

Because of these substantial changes in the European MRL legislation, the results of previous monitoring reports published by EFSA and the European Commission are not directly comparable with the results reported in this report. The comparability of the data among reporting countries and over time is hampered not only by the important change in the legal situation but also by other factors, such as the change in the number of the reporting countries over time, the difference in the design of the national monitoring plans and the data validation and recoding.

Typically, in each European reporting country two monitoring programmes are in place: a national control/monitoring programme (designed by each country) and a coordinated European programme for which clear guidance is given on which specific control activities should be performed by the Member States.

The **EU coordinated programme** aims to provide statistically representative data regarding pesticide residues in food available to European consumers. The lots sampled should be chosen without any particular suspicion towards a specific producer and/or consignment. Thus, the results obtained in the coordinated programme are considered as an indicator for the MRL compliance rate in food placed on the European common market and allow an estimation of the actual consumer exposure. Although the participation was not mandatory in 2008, all 27 Member States and the two EFTA states participated in the EU harmonised control programme.

A total number of 11,610 samples of nine different commodities (oranges, mandarins, pears, potatoes, carrots, cucumbers, spinach, beans without pods, and rice) were taken in the 2008 EU coordinated pesticide monitoring programme. These samples should be analysed for 78 pesticides (including the relevant metabolites, as specified in the legal residue definition). 2.2% of the samples exceeded the MRL, while the percentage of samples with measurable residues above the quantification level, but at or below the MRL, was 35.7%. In 62.1% of the samples no residues were detected. The overall MRL exceedance rate was comparable with the previous year rate (2.3%). It is noted that the percentage of samples without measurable residues increased from 52.7% in 2007 to 62.1% in 2008. The highest percentage of samples exceeding the MRL was identified for spinach (6.2%) followed by oranges (3.0%),

rice (2.4%), cucumbers (2.1%), mandarins (2.0%), carrots (1.8%), pears (1.6%), beans without pods (0.8%) and potatoes (0.5%).

It should be noted that the presence of pesticides, even an exceedance of an MRL, does not imply that this is a food safety concern. To ascertain the latter exposure assessments are required.

The official controls carried out at national level in the framework of the **national monitoring programmes** are complementary to the control performed in the context of the EU coordinated programme and are performed to ensure compliance with the provisions established in food legislation regarding the pesticide residues. Member States and EFTA countries are free to decide on the design of the national monitoring programmes for pesticide residues in food.

The total number of samples taken in the context of the national programmes in 2008 was 70,143[1]. This includes 67,887 surveillance samples and 2,256 enforcement samples. Compared with the previous year, this is a decrease by 5.9 %.

National programmes cover samples originating from national, Community and third country production. The majority of samples taken were produced in one of the European reporting countries (77%), while 20% of the samples were taken from imported consignments or lots. For 3 % of the samples the origin was not reported. Approximately 200 different unprocessed food commodities were analysed for pesticide residues by all reporting countries.

In 2008 the number of pesticides sought by each country varied from 39 to 679. The total number of substances covered by all reporting countries was 862.
In total, residues of 365 different pesticides were found in measurable quantities in fruit and vegetables, while in cereals residues of 76 different pesticides were observed. As in previous years, the number of different pesticide residues found in fruit and vegetables in 2008 was higher than the number of pesticides found in cereals, which also reflects the greater number of products used in the fruit and vegetables category.

96.5% of the surveillance samples analysed were below the legally permitted limits, while 3.5% of the samples exceeded the MRLs. The overall reported MRL exceedance rate (3.5%) is lower than in the previous year where 4.2% of the samples were found to exceed the MRLs.

A higher incidence of MRL exceedances was also observed in samples imported from third countries (7.6%) than from EU (2.4%).

A significantly higher MRL exceedance rate was observed for enforcement samples (10.3%) compared to

surveillance samples (3.5%). The former are taken when there are suspicions about the safety of a product and as a follow-up of violations found previously.

For **baby food**, the European legislation is more restrictive than for other food categories as no more than 0.01 mg/kg of any single pesticide residue is permitted in baby food samples. In 2008, a total of 2,062 surveillance samples of baby food were reported by 25 countries. Quantifiable residues above the reporting level were found in 76 samples, while the MRLs were exceeded only in 4 samples (0.2%).

At EU level no specific MRLs for **organic products** are established, i.e. the MRLs established for conventionally produced products apply. In 2008, the results of a total of 3,131 samples of organic origin were reported by 22 countries. For organic fruit and vegetables, a lower rate of MRL exceedances (0.9%) in comparison to conventionally grown fruit and vegetables (3.7%) was found. It should be mentioned that EU legislation allows the use of certain active substances in organic food production.

Considering the results of both the national and the EU coordinated programmes (including enforcement samples), the percentage of samples of fruits, vegetables and cereals with **multiple residues** (i.e. single samples which contain residues of more than one pesticide) has increased over the time, from 15% in 1997 to 26% in 2007. In 2008, residues of two or more pesticides were found in 27% of the analysed samples of fruits, vegetables and cereals. The highest number of different pesticides in a single sample was 26 in 2008 and was recorded for a table grape sample. Multiple residues in one sample can result from the application of different types of pesticides (e.g. insecticides, fungicides and herbicides) to protect the crop against different pests, diseases or other threats having an impact on the quality or yield of crops, from mixing of lots with different treatments, contaminations, but also from practices which do not respect the principles of good plant protection practice.

The results of the monitoring were used to perform **exposure assessments.** However, this exercise was impeded by the fact that aggregated results, rather than results at single chemical determination level, were provided to EFSA. This lack of information was bridged by introducing conservative assumptions in the exposure modelling which bias the results by overestimating the actual consumer exposure. In order to improve the accuracy of the actual consumer exposure calculations with 2009 monitoring data, EFSA has developed and tested a new pesticide monitoring reporting format.

The long-term exposure assessment was based on the residue findings for the food commodities which are the major constituents of the human diet. The calculations demonstrated for all except one pesticide that even under conservative assumptions the **chronic (long-term) exposure** does not exceed the toxicologically acceptable limits. For diazinon a potential consumer health risk could not be excluded in the first tier risk assessment. However, after having performed a more refined calculation, taking into account that residues are lower in food commodities that are

consumed after processing (i.e. apple juice), EFSA concluded that the long-term consumer exposure to diazinon residues is not likely to exceed the Acceptable Daily Intake (ADI). Thus, also for diazinon no long-term consumer risk is expected. It is noted that the use of diazinon is no longer permitted in the European Union.

The assessment of the **acute (short-term) consumer exposure** was performed for the nine food commodities which were analysed under the EU coordinated monitoring programme. The assessment was based on worst-case scenarios: the consumption data for consumers who eat a large portion size of the food item under consideration were combined with the highest residue measured in the coordinated programme. In order to accommodate for a possible non-homogeneous distribution of residues in an analysed food lot a variability factor was introduced. Assuming a coincidence of these events (high food consumption, high residue concentration and inhomogeneous residue distribution in a lot), a potential consumer risk could not be excluded for 35 pesticide/commodity combinations.

The highest potential exceedances of the toxicological reference value was indicated for dimethoate/omethoate on potatoes and spinach (10,763% and 2,938% of the ARfD, respectively), methiocarb on cucumbers (2,519%), dimethoate/omethoate on pears (1,730%) and mthomyl/thiodicarb on oranges (1,644%). However, the critical intake events identified in the acute risk assessment calculations were considered very unlikely, taking into account the frequency of critical residues and the frequency of extreme consumption events. For 11 of the pesticide/commodity combinations for which a critical intake situation could not be excluded, risk management actions have already been taken by withdrawing authorisations or by lowering the MRLs.

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[1]This figure also comprises the number of samples taken for the EU coordinated programme since these samples in many countries were analysed for a wider range of active substances than defined in the coordinated programme and are therefore belonging to both programmes, the national and the EU coordinated programme.