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THE NATIONAL ACTION PLAN TO REDUCE THE USE OF PESTICIDES IN THE CZECH REPUBLIC

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1. Introduction

The National Action Plan to Reduce the Use of Pesticides[1] (hereinafter the "NAP") is a set of measures which is implemented in the EU Member States (hereinafter "MS") as a programme to reduce the adverse impact of plant protection products (hereinafter referred to as "PP products"") on human health and the environment. Pursuant to Article 4 of Directive 2009/128/EC of the European Parliament and of the Council establishing a framework for Community action to achieve a sustainable use of pesticides (hereinafter also "Directive 2009/128/EC"), each MS shall prepare its own national action plan and inform the European Commission and other MS about it by 26 November 2012, with effect from 1 January 2013.

The NAP sets quantitatively measurable tasks, milestones and final objectives, measures and timetables to reduce the risks and limit the impact of using the products on human health and the environment, with the aim to support the development and implementation of integrated pest management (hereinafter also "IPM") and alternative approaches or procedures in order to reduce dependency on the use of the PP products. The NAP takes into account the plans for pesticide use laid down by other Community legislation, such as the measures referred to in Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for Community action in the field of water policy.

The NAP also contains indicators for monitoring the use of PP products containing active substances of particular concern[2], especially if alternatives are available. When elaborating and reviewing the NAP it is necessary to take account public health, the impact of the proposed measures in social and economic areas and in the field of the environment, specific national, regional and local conditions, and the legitimate interests of all parties concerned.

1. The legislative framework and related policies

The Czech NAP is based on the provisions of Section 48a of Act No. 326/2004 Coll., on Plant health Care and Amending Certain Related Acts, as amended (hereinafter also the "Plant health Act").

The NAP contains, primarily

- harmonised[3] and non-harmonised risk indicators,
- trends in the use of active substances,
- active substances, crops, areas or procedures, which should be given special attention,

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[1] At the start of the NAP coming into force the framework Directive 2009/128/EC of the European Parliament and of the Council only applies to pesticides in the form of plant protection products.

[2] According to Regulation (EC) No. 1107/2009 of the European Parliament and of the Council a "substance of concern" means any substance which has an inherent capacity to cause an adverse effect on humans, animals or the environment and is present or is produced in a plant protection product in sufficient concentration to present risks of such an effect. Such substances include, but are not limited to, substances meeting the criteria to be classified as hazardous in accordance with Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, and present in the plant protection product at a concentration leading the product to be regarded as dangerous within the meaning of Article 3 of Directive 1999/45/EC.

[3] Annex IV to Directive 2009/128/EC of the European Parliament and of the Council.

- a schedule of good practices for the purposes of achieving the safe use of PP products,
- an evaluation of the necessary intervals for controls on equipment for applying the PP products, which users a technique other than spraying to apply the PP products (e.g. treaters, wick applications to the leaf), and supplementary equipment for applying PP products that are only used on a small scale by professional users,
- the possible ways of informing persons likely to be exposed to spray drift,
- procedures to support the implementation if integrated pest management

The Ministry of Agriculture of the CR (hereinafter the "Ministry" or the "MoA"), in cooperation with the Ministry of Health (MoH) and the Ministry of the Environment (MoE), creates and evaluates and always updates the NAP every 5 years at the latest. The Ministry publishes the draft NAP or its update in a manner enabling remote access. At the same time, the Ministry informs the public, in the form of a notice in the periodicals, on the publication of the draft NAP or its update and on the possibility of persons, who feel they are affected by it, to convey their comments to the Ministry. The time limit for conveying the comments is two months from the date of publishing the draft NAP or its update.

The NAP is approved by the Government. Before submitting its proposal to the Government, the Ministry shall evaluate and take into account the comments made on the draft NAP or its update. The general evaluation of the comments, which clearly relate to the proposal put forward, shall be published by the Ministry in a manner enabling remote access. If a comment is not accepted, the reason for this will be published.

The Ministry publishes the approved NAP in a manner enabling remote access and immediately announces any significant changes in the NAP to the Commission.

2. Subject matter of the NAP and the initial state of the areas concerned

The NAP concerns areas that are or may be affected by the negative impacts of using plant protection products. The NAP concerns three areas:

- protecting public health, preventing acute and chronic poisoning resulting from accidents and careless use of PP products and health risks as a result of consuming food containing above-limit residues and monitoring food containing residues, which are likely to produce health risks
- protection of groundwater and surface water, in particular water resources and sources of drinking water,
- protecting non-target organisms (plants, invertebrates, vertebrates) both directly and indirectly (by means of the food chain) at risk from using the PP products in agricultural and forest ecosystems.

In the field of **protecting public health**, health care facilities make reports in accordance with the International Statistical Classification of Diseases and Related Health Problems (ICD). The toxic effect of pesticides comes under item T60. From the reports it is clear that, compared to the 1990s, the number of people admitted to hospital in relation to pesticide poisoning has fallen by about a third and hospitalisation time has similarly decreased too – see Annex No. 1[4]. It only documents the positive trend in the incidence of poisoning caused by PP products. It is assumed that the absolute numbers of statistically registered data do not correspond to reality, for the following reasons:

- often the underlying cause of a problem due to exposure to the PP products will not be revealed
- the disease may be reported under other codes (such as clinical diagnosis)
- code T601 includes biocidal products and plant protection products
- only hospitalisation cases are in the available statistics.

Since 1991, the National Register of Occupational Diseases in the CR has been kept at the Centre of Occupational Health at the National Institute of Public Health; in 2003 it was linked to EUROSTAT statistical system on occupational diseases. The information in the reporting of cases of poisoning by professional PP products is, for this purpose, very difficult to find, because the reporting was not conceived of for this purpose. In addition to the above factors affecting the reporting under the ICD it is necessary to take into account the fact that some employees may conceal the causes and symptoms of poisoning in an effort to keep their job.

For a guide to the extent of possible health problems caused by pesticides, data was also taken from the Toxicological Information Centre (TIC). The TIC consults on issues raised by both health workers and other persons. Part of the consultation consists of cases in which people did not comply with the recommended measures and procedure when handling the PP products and a small group consists of deliberate self harm. The health statistics records

[4] The International Statistical Classification of Diseases and Related Health Problems – data from the Institute of Health Information and Statistics of the CR.

damage to health caused by "pesticides" or queries to the TIC and rarely distinguishes between plant protection products and biocidal products. The statistics cover not just agriculture, but also other areas (e.g. communal hygiene).

The chart in Annex No. 2 shows the development of queries about pesticides in comparison with the number of queries of another character made to the TIC from 1991–2009. While the total number of queries increased by about 2.5 times, the number of queries about pesticides stagnated, with small fluctuations. The number of queries about individual types of PP products for the period 2005–2009, separated into children, adults and animals, is shown in the table in Annex No. 3. The largest number of queries is about rodenticides and herbicides, in the case of insecticides it is for substances from the group of organophosphates, carbamates and pyrethroids. Although, for example, a far smaller dose is now necessary to kill rodents, which allows the concentration of active substance in the trap, the frequency of application and the application dose to be reduced ("single-feed anticoagulants") - the toxicity of rodenticides has increased in recent years. Therefore, the risks to humans and domestic animals during incorrect and inexpert application of rodenticides cannot be overlooked. The most dramatic progress tends to be poisoning with PP products containing organophosphates or carbamates. A positive trend can be expected as a result of a reassessment of the risks posed by these groups of PP products in accordance with the provisions in force in the EU and the decrease in approved active substances from these groups.

The risk residues pose to human health is their presence in food or raw materials for food production. The Czech Agricultural and Food Inspection Authority (CAFIA) regularly monitors these values throughout the cultivation, storage and processing of plant commodities. The CAFIA overview of residues in PP products originating in the CR, other EU Member States and from third countries for the period 2004–2010 can be found in the table in Annex No. 4a, while the situation in selected commodities of plant origin is shown in the table in Annex No. 4b.

It can be seen from the total overview that in the last two monitored years (2009–2010) there was an increase in the proportion of samples originating in the CR in which residues were detected (in the order of 20% to 50%), which can also be due to the development of more precise analytical methods and a larger number of controlled substances. The proportion of samples of Czech origin with an above-limit occurrence of residues, however, has not changed percentage-wise, remaining in the order of single figures every year. However, in the last 3 years the number of controlled substances has increased two-fold, while the annual number of samples taken in the CR has, with the exception of 2010, remained virtually the same. An overview of the occurrence of residues by selected commodities shows that for fruit and vegetables the percentage of samples of Czech origin with above-limit residues is rather exceptional, their number is in the order of several units, and this trend is ongoing. For the commodities infant food, potatoes and cereals and products made from them, the occurrence of residues in samples is virtually zero; although for some commodities the number of samples taken is low.

The presence and concentration of the PP products' active substances and their metabolites **in the aquatic environment** is influenced by both the characteristics of each product, such as water solubility, mobility and persistence in the soil and rock environment, water, etc., as well as the extent and frequency of their use, the growing season and the growth stage during application to the crop, the slope of the land, soil and weather conditions, and other influences, including the application methods and the technology used.

For an objective assessment of the level of contamination of the aquatic environment and drinking water sources by the PP products, carried out by the European Environment Agency (EEA) in comparable European conditions, the number of water samples taken for testing for the presence of the PP products is taken into account as is the number of sampling locations (monitoring network), the percentage of samples with an above-limit content of the active substances (including their metabolites), and the long-term developmental trend with regard to the legislative and technical measures to improve the situation in this area (http://www.eea.europa.eu). An assessment of the level of contamination of the aquatic environment by pesticides is also part of the evaluation of the environmental objectives in each of the sections for surface water and groundwater, which is carried out once every 6 years and is published in the river basin management plans.

In relation to the available data, an overview was processed of the active substances of PP products most frequently detected in surface waters in the CR, together with information regarding their area of use and total consumption during the last ten years (1999–2011) - see Annex No. 5. The increase in the consumption of certain active substances, in particular herbicides in recent years due to changes in the structure of the crops cultivated, correlates with the frequency of detection of these substances in surface waters (e.g., acetochlor, metazachlor, terbuthylazine). Additional data from the CR also documents this fact; in some locations the same active substances of the PP products occur and they exceed the limit values for drinking water. In 2009, for example, in the area of the Želivka Reservoir relatively high concentrations of terbuthylazine, acetochlor, metolachlor, dimethoate were found exceeding the TLV (threshold limit values) of 100 ng/l.

In the field of water protection it is possible to use the data from the Information System of Assessment and Reference Reports of Water Monitoring, which is administered by the Czech Hydrometeorological Institute (CHMI), to map the development of the risks of residues discharged into underground water. Since 2000, the number of active substances and their metabolites in this database has increased more than nine fold. Annex No. 6 contains the data monitored by the CHMI in the CR in the period 1991–2011 and includes the frequency of residues occurring in groundwater, giving the % above the detection limit and the % above the limit of 0.1 μg/l (Table 2), Annex No. 7 gives the maximum concentration of the PP products' active substances and metabolites in groundwater during monitoring by the CHMI in the CR in the period 1991–2011.

The Ministry of Health of the CR regularly processes detailed reports on the quality of drinking water in the CR including pollution caused by the PP products active substances and their metabolites. In the report for 2005–2010, the active substances of herbicides (in particular, terbuthylazine, desethylatrazine and atrazine) were found every year in the samples of treated drinking water, which were assessed. This was a result of leaks from agricultural production. The number of samples with above-limit concentrations of residues, however, was of the order of tenths of a percent of the total number of analyses; the exception was 3.77 % of above-limit atrazine concentrations in 2005, 7.6% of desethylatrazine and 2.5% of atrazine in 2008 and 6.58 % of desethylatrazine and 3.29% of atrazine in 2009.

During the evaluation of the above data, from the perspective of residue occurrence, it can be stated that in recent years PP products with atrazine as the active substance (e.g. Zeazine 50) and hexazinone (Velpar) have been eliminated and their registration withdrawn and preparations containing the active substance atrazine and terbutryn are no longer on the Czech market. Despite this atrazine (including metabolites) still appears in increased concentrations

in groundwater in the CR and in most European countries, is a consequence of its earlier mass and long-term use in doses of up to 5 kg active substance/ha of maize in monoculture maize cultivation systems. A similar case is that of the substance hexazinone, as Velpar was intensively used in forestry management in doses of up to 2.7 kg active substance per hectare. Furthermore, the consumption of PP products with the active substance alachlor has dropped by roughly about 60%, PP products with the active substance isoproturon by 40% and MCPA by 60%. However, a 53% increase in consumption was recorded for PP products with the active substance acetochlor and terbuthylazine and thiophanate-methyl by more than 7 to 8 times. These changes are related with the review process in the European Union, in accordance with Council Directive 91/414/EEC, concerning the placing of plant protection products on the market, where many active substances were withdrawn and replaced by other, less harmful ones.

For surface water sources the presence of the newly used PP products' active substances and their metabolites can be observed, at the expense of the active substances of PP products being gradually phased out. Some groundwater sources, however, have not seen a corresponding fall in the concentration of active substances or their metabolites, even after a long period of the PP products no longer being used. In connection to developments in analytical technique, previously unmonitored metabolites of the PP products' active substances are being found in surface and groundwater drinking water sources.

An important aspect of monitoring drinking water is the fact that the extent of monitoring the PP products' active substances and their metabolites is not precisely defined. Decree No. 252/2004 Coll., laying down hygiene requirements for drinking and warm water, and the frequency and extent of drinking water control, as amended, states that the supplier of drinking water has an obligation to monitor PP products, and their metabolites, that are likely to occur in a given source, and, if some PP products are not included in the full analysis, the producer of drinking water must demonstrate why it is not assumed residues will occur in the source. During the selection of active substances for monitoring their occurrence in water, it is necessary to take into account new information on the danger of specific substances. For instance, for many years PP products with the active substance glyphosate were considered to be environmentally friendly, while recently it has become known that, in particular, its metabolite AMPA has demonstrably negative effects on people's health. Yet the application volume of these PP products is considerable. Currently, drinking water suppliers have only very limited access to information about the application of PP products, their possible occurrence in water sources, and thus even in drinking water (only an incomplete national total of the amount of active substances or PP products applied is available and this has a one- to two-year delay). In many cases, the scope of the analyses carried out is incomplete and targeted, which may lead to an underestimation of the real situation. There is also limited information on the relevant metabolites of the active substances, their toxicological properties and the methods for determining them in raw or drinking water. Thus, operators of public water mains do not have sufficient information to ensure the appropriate monitoring of drinking water quality.

A problem, which is common for all active substances referred to in the table in Annex No. 5 in terms of their risks, is there pre-emergent or early post-emergent application (i.e. after sowing or shortly after germination), when the soil surface is not sufficiently covered by vegetation. At this time, during heavy, torrential or long-lasting rain, surface waters can become contaminated by the PP products used as a result of wash off or leaching from the soil to the drainage (dewatering) systems. This is accentuated by the fact that safeguard zones,

aimed at reducing the risk of diffuse water pollution during, have not been set for all PP products. However, a gradual improvement in this situation can be expected given the ongoing re-evaluation of the active substances and PP products in accordance with Regulation (EC) No. 1107/2009 of the European Parliament and of the Council. Furthermore, changes in farming in the vicinity of water reservoirs and watercourses (surface and underground) with regard to the risks associated with the use of PP products in their surroundings must primarily be dealt with by Act No. 254/2001 Coll., on Water and Amendments to Some Acts, as amended (hereinafter also the "Water Act") possibly with the use of a Government Regulation on Anti-erosion Measures.

The existing system of protecting water resources from contamination with foreign substances is based on the existence of buffer zones around groundwater and surface water resources (WRBZ) in accordance with the provisions of the Water Act. In some situations, the formerly demarcated zones are insufficient with regards to changes in the economy (see above). In addition, anti-erosion technologies determine that the erosion threat to the land is dependent on the slope as well as its length. Thus, even a relatively flat slope may be vulnerable to erosion or surface runoff, if it is long, and it may give rise to the wash-off of pre-emergent PP products into the water courses.

Likewise demonstrating non-compliance during checks on the application of PP products in WRBZ is technically and financially demanding. The person contaminating a drinking water source is often not determined and the control system lacks integration and continuity (control of the use of the PP products in the WRBZ multiplied by residue monitoring in drinking water sources, especially surface). In addition, in some cases, agricultural subjects find it very difficult to find information about the borders of a declared WRBZ.

In the area of protecting non-target living organisms from the negative effects of PP products it is expedient to consider the impacts on these monitored groups of organisms separately - on bees, deer and other wild vertebrates, on invertebrates, on fish and other aquatic organisms and on non-target plants.

To assess the long-term trend of the PP products' influence on bees in the conditions of the CR with a view to developing a range of registered PP products, the relevant legislation and the practical activities of the PP products' users have been used, in particular the annual reports of the Bee Research Institute (BRI) submitted to the Ministry of Agriculture during 1999–2009.

At the beginning of the period evaluated, there was significant growth in the number of cases of bee intoxication with the PP products, which, according to the BRI evaluation, was due to the increased fragmentation of land ownership and the lower expertise of the new users of PP products. At the beginning of the monitoring period the main cause of bee poisoning was infringing the regulations and incorrect use of groups of PP products harmful (dangerous) to bees, in particular the categories of PP products poisonous to bees (toxic or particularly dangerous). The dominant product, which caused significant poisoning of almost catastrophic proportions, was the use of the insecticide product Regent with fipronil as its active substance. Its registration in the CR, however, was subsequently limited to avoid such poisonings. The results of the investigations and evaluations carried out by the BRI from 2006–2008 show a significant improvement in the situation. From a total of 29 investigated cases of bee decline in 2006, 21 cases in 2007 and 33 cases investigated in 2008 there was not one proven or

suspected poisoning by pesticides. The cause of bee death in these cases was, to a great degree, shown to be dangerous infections (American foulbrood, varroasis and bee nosematosis).

Another data sources for evaluating the impact of PP products on bees are the data from the state veterinary institutes (SVI) and the SPA. In 2008, the Jihlava SVI presented several cases of bee poisoning as a result of the incorrect application of PP products based on organophosphates and carbamates, in the same year the Prague SVI investigated several cases of bee intoxication with the suspicion of an erroneous application of insecticides, including pyrethroids. In 2009, the SPA recorded 7 cases of bee intoxication by PP products. Clearly the most serious was a case, also documented by Jihlava SVI, of bee intoxication with the insecticide Perfekthion (active substance dimethoate), which is particularly dangerous to bees when large numbers of bees pass over the field during the application period. In other cases, 2009 saw a breach of the conditions for application (pyrethroids), an illegal combination of fungicides and adjuvants, and the Prague SVI also investigated several cases of suspected poisoning of bees by cyproconazole (the fungicidal preparations Artea, Alto Combi, etc. – unclassified PP products with regard to the protection of bees, or as a PR) during application in stands with flowering weeds. In two cases there was even deliberate misuse of PP products (pyrethroids) to poison bees by an unknown culprit.

In some Member States of Western Europe (Italy, France, Germany), there have recently been reports of new serious problems for bees, which are associated with the use of some insecticides (imidacloprid, clothianidin) in the form of seed dressings, in particular rape and sunflower. The presumed causes of the harmful effects of such dressings under discussion is the overlap in time of the systemic effect until the treated crops flower, shortcomings in application during dressing together with a certain sowing technology, sowing, during which the dressing scatters and contaminates the surroundings, and also possible synergies of sub-lethal doses of insecticides upon a hive weakened by infection. Another likely hypothesis in this regard is the collection of guttation water by bees from systemically “poisoned” emerging stands originating from dressed seed (hives in certain phases of their development need relatively large quantities of “drinking” water).

A generally favourable factor is the increasing number of professional users of PP products with competence in handling the PP products and the declining proportion of particularly risky product groups for bees in the range of authorised PP products and auxiliary agents for plant protection, as can be seen below in Table 1:

Table 1: Number of PP products especially hazardous and harmful to bees in the range of PP products and auxiliary agents for plant protection products authorised for use in the CR in 2000 and in 2009

Year	Total number of authorised PP products	No. of PP products esp. hazardous to bees	No. of PP products harmful to bees
2000	667	32	123
2009	767	20	59

For an objective and comprehensive assessment of the impact of using in business operations the PP products on wild vertebrates, in particular, their indirect effect on biodiversity, in the territory of the CR there is only a limited number of data sets or they are

not sufficiently conclusive. For instance, in 2010, there was widespread poisoning of gulls in the Central Moravia region, which was proven to be caused by the active substance of the rodenticide Lanirat. Although this preparation was used on the surrounding fields against the common vole, the exact source of the poisoning was not confirmed.

So far, in the conditions of the CR, regular monitoring targeted at this risk is still lacking, one which focuses on the identified risks in a way that allows these risks to be effectively dealt with. To illustrate, it is possible to present the British results of similar monitoring, which, for example, give 121 cases of proven poisoning of terrestrial vertebrates by PP products in 2007. Of these, only two cases of poisoning took place under the conditions for authorised use of PP products. The highest number of poisonings (75 cases) was caused by the intentional misuse of the PP products. In 21 cases, infringement of the application conditions was proven and for 23 cases the causes of poisoning could not be clarified. The highest number of incidents was caused by the use of rodenticides and the most affected group of vertebrates were owls and predators[5].

Thus, to evaluate the risk of harmful effects on wild vertebrates in the CR in this document, the data used concern the extent of use and the number and type of PP products with increased risk for wild vertebrates and an evaluation of the causes and frequency of cases of proven damage, i.e. chronic and acute cases of poisoning in mammals and birds. An overview of the number and consumption of PP products in terms of their toxicity to animals and birds, including the extent of their registered use (according to the 2009 SPA Bulletin), is given in Annex No. 8. Generally there has recently been a significant diversification in the range of PP products placed on the market in the CR with an increasing proportion of active substances with a decreased effect on non-target organisms. Thus, the number of PP products classified as dangerous and particularly dangerous for animals and birds has gradually fallen. The rodenticides are the exception in this trend, for which the necessary innovation has not occurred in this respect.

For the large majority of PP products (with the exception of categories of particularly dangerous and rodenticides) during their longstanding and widespread use in the conditions of the CR there was no confirmation of disproportionate risks of secondary harmful effects on certain groups of wild vertebrate animals (subject to the absence of targeted monitoring for these risks). The insecticidal dressings, which are now coming onto the market for agricultural practices in the form of dressed, on the whole packaged seed, are a relatively new risk group. The potential risks are associated with the attractiveness of seed as a food source for several animal species if the dressed seed has not been sufficiently incorporated into the soil.

On the basis of published information and a professional estimate, the main problems in recent years, may be regarded as the deliberate abuse of highly toxic PP products, their illegal circulation and use to poison certain species of wild and domestic animals, i.e., criminal cases. Illegal traps using a concentrate of the insecticide Furadan 350 F with the active substance carbofuran, mainly used in the past to protect hops and in decorative horticulture, deliberately placed to poison a local overpopulation of beech martens and stray dogs and cats, represent an exceptional danger of direct and secondary intoxication of protected, often very rare species of predators and owls. In 2007, the SPA decided to

[5] Pesticides in the UK, 2009: The 2008 report on the impacts and sustainable use of pesticides, and the report of the Pesticides Forum. DEFRA, UK, p. 27.

terminate the registration of Furadan 350 F (and other formulations containing carbofuran) for outdoor use with authorisation to use up stocks in 2008 and, upon request by the SPA, its manufacturer reportedly withdrew supplies of this product from the distribution network. Given the long-term toxic effects of carbofuran there is a continuing danger of illegal proliferation and misuse of Furadan. As regards the PP products' influence on fish and other aquatic organisms, in the CR there is a working system monitoring accidental fish deaths with the subsequent analysis of the causes including an assessment of the impact of the PP products' harmful effects. The results of this monitoring for 2006–2010, according to the annual reports from the Research Institute of Fish Culture and Hydrobiology of the South Bohemian University in Vodňany are listed below in Table 2 and show that the use of PP products in recent years has not been the cause of accidental fish deaths. One of the main causes of accidental deaths is the contamination of water by organic substances and the resulting oxygen deficit. Long-term monitoring of the assessment of PP products' impact on fish and aquatic organisms confirms this.

Table 2: An overview of the number of cases of accidental fish deaths investigated in the CR from 2006–2010

Year	Total number of cases	Number of cases with proven impact from PP products	Number of cases with suspected effect of PP products
2006	31	0	1 (SVI Prague)
2007	51	0	0
2008	N/a	n/a	n/a
2009	45	0	1 (SVI Olomouc)
2010	14	0	0

According to an analysis of the impacts on non-target plants (field crops, permanent cultures or trees and shrubs growing individually) in the vicinity of the land on which the PP products are applied, such a case is always associated with an incorrect procedure, and failure to comply with the principles laid down for applying the PP products. According to the very tentative SPA sources, for instance, in 2009, a total of 8 cases of damage to agricultural crops were recorded. In this context, it should be noted that the damage resulting from the incorrect application of PP products or confusing them with another, in many cases, were dealt with in a "quiet way" in the form of insurance claims, which do not, however, have any disciplinary nature for the subjects that caused the damage.

So far no working monitoring system has been introduced in the CR that would analyse the changes in the communities of soil micro-organisms and invertebrates and the changes in their population dynamics due to the action of the PP products. Although the results of a number of research studies from the territory of the CR bring information about the decline in the species spectrum of invertebrates in agricultural ecosystems, the share PP products have in reducing invertebrate biodiversity cannot be determined because changes in their communities are the result of changes in land management systems and technology.

Non-selective zoocides have a particularly negative impact on invertebrate communities. Their use in the Czech Republic is now prohibited or restricted in integrated production systems for fruit, vegetables and vines.

Currently the protection of invertebrates, similarly with the protection of non-target plants, relates to the obligation to maintain untreated buffer zones along the edges of the land, if it is specified in the instructions for use (the label) for the individual PP products. With the exception of the areas under nature and landscape protection regimes, the significance of this measure for the practical protection of invertebrates is minimal when compared to the wide-scale treatment of land with these PP products.

Conclusions

The overall trend in infringing the principles laid down for the use of the PP products has a decreasing tendency, which is connected with the strengthening awareness of agricultural entrepreneurs about the application of the requirement for professional capacity for persons working with the PP products or the provision of advice; it is further connected with the introduction of a system of regular control testing for machinery for plant protection products, with the gradual replacement and modernisation of application technology and also with targeted state supervision focused on the area of handling the PP products.

3. The NAP objectives and milestones and the manner of implementing them

The quantification of the objectives and milestones of the NAP for the Czech Republic respects the basic role of plant health care, i.e. to ensure plant health and plant products with regard to food safety and consumer protection, and is based on identifying the risks associated with using the PP products. These risks are identified and analysed in Section 2 of this document.

In the context of selecting measurable indicators for the development of the risks associated with using the PP products, there is no corresponding long-term comparison on the consumption of PP products in the territory of the CR, especially considering the diversity of the data collection methods. Generally, however, the consumption of PP products in the CR, compared with the EU-15, is significantly lower both in absolute numbers and per hectare of agricultural land.

An essential assumption for the successful practical implementation of the principles of sustainable use of the PP products is that key persons in plant protection in practice have expertise and experience that is also obtained through objective and independent advice in plant protection. This advice cannot be generalised, instead advisers and specialists must be specifically educated with regard to the wide spectrum of crop types and methods for detecting and reducing the occurrence of plant pest organisms including regularly updating this education with regard to the rapid development and modification of PP products.

The main general principles of integrated pest management[6] already work in practice in the CR, thus it does not concern completely new procedures. The introduction of integrated pest management, must not economically harm agricultural entrepreneurs, but an entrepreneur must assess the option of taking advantage of all the general principles of integrated protection in the context of specific managerial decisions about how to grow the given crops on the given land, taking into account the risk of damage to plant production by organisms harmful to plants, which, under the given conditions, can be realistically envisaged. The methodological procedures for implementing the general principles of integrated pest management for plants and plant groups, published by the State Phytosanitary Administration pursuant to Section 5 (4) (e) of the Plant health Care Act, have only a commendatory character and are used to facilitate the decision-making of agricultural entrepreneurs and plant health advisors.

It is possible to identify different methods of using the PP products in plant protection systems with low inputs of the PP products: integrated pest management - integrated plant production – organic farming; and all three systems can be clearly identified from one another. However, while respecting the general principles of integrated pest management will be mandatory from 1 January 2014, organic farming and integrated plant production is voluntary and is supported by subsidy incentives.

[6] See the general principles of integrated plant protection pursuant to Decree No 205/2012 Coll., on the General Principles of Integrated Plant Protection.

Organic farming corresponds to the principles of sustainable development in agriculture, because it uses environmentally friendly ways to suppress weeds, pests and diseases, it prohibits the use of synthetic pesticides and fertilisers, it cares for the overall harmony and biological diversity of the agricultural ecosystem and favours renewable energy sources and recycling. In the CR there is also national legislation for organic farming (Act No. 242/2000 Coll., on Organic Farming and on the Amendment to Act No. 368/1992 Coll., on Administrative Fees, as amended, and Decree No. 16/2006 Coll., which implements certain provisions of the Act on Organic Farming, as amended) and developmental support tools have been set. Organic farmers are supported by the state through the Rural Development Programme 2007–2013, that being both in the context of the agri-environmental measures in Axis II through payments for areas included in organic farming, and in the form of a point advantage when assessing investment projects (Axis I and III). As of 13 April 2012 there were 4,003 organic farmers registered in the CR, who managed an area of more than 460,000 ha of agricultural land, which represents 10.65% of all agricultural land. The bulk of organically farmed land consists of permanent pasture, which in general does not require a great deal of chemical plant protection.

Integrated plant production (IP) is an intermediate set of procedures between standard conventional plant production and organic farming. The International Organization for Biological Control (IOBC[7]) has laid down the philosophy, general principles and professional guidelines for IP as a management system that produces high-quality food and other products from natural sources whilst using regulatory mechanisms that replace polluting inputs and ensure sustainable agriculture. Emphasis is placed on a comprehensive systemic approach, the central role of agri-ecosystems and on a balanced nutrient cycle. The use of biological, chemical and agricultural-technical methods is balanced with regard to environmental protection, the agricultural entrepreneurs making a profit and social requirements.

Despite the fact that EU legislation targeted directly at IP does not exist, this term appears in a number of EU and CR legal documents[8]. In the CR directives were issued for the application of IP systems in the cultivation of fruit, vegetables and vines. For vines the directive is issued and updated by the Association of Integrated and Organic Grape and Wine Production (EKOVÍN)[9], for fruit it is the Association for Integrated Systems for Fruit Cultivation (SISPO)[10] and for vegetables the Association for the Integrated System of Vegetable Production.[11]

In organic farming and integrated plant production systems the protection of plants with low inputs of PP products is fully applied and in some respects the requirements for management in these systems are beyond the general principles of integrated pest management[7]. The application of organic farming and integrated production plants can be

[7] See http://www.iobc-global.org.

[8] At the EU level, it primarily concerns the Implementing Regulation (EU) No 543/2011, laying down detailed rules for the application of Council Regulation (EC) No 1234/2007 in respect of the fruit and vegetables and processed fruit and vegetables sectors. In Czech legislation IP is primarily is part of Government Order No 79/2007 Coll., on conditions for the implementation of agri-environmental measures, or Government Order No 318/2008 Coll., on the Implementation of Certain Measures of Common Market Organisation of the Fruit and Vegetables Market.

[9] See: http://www.ekovin.cz/sekce-integrovane-produkce/smernice-integrovane-produkce
[10] http://www.ovocnarska-unie.cz/web/web-sispo/
[11] http://www.zelinarska-unie.cz/Portals/0/PRAVIDLA%20IPZ.pdf

considered more than adequate for implementing the sustainable use of PP products in accordance with Directive 2009/128/EC. It is therefore necessary to maintain the current incentives for organic farming and integrated plant production in the CR. Therefore the objectives and milestones of the NAP are formulated so as to be in accordance with Czech programmes for further developing organic farming and integrated plant production. Furthermore, in the CR several crop cultivation systems are supported, respectively landscape care, aimed at preserving or improving the environment and the elements of these systems, which concern plant protection methods, often overlap (e.g. green belts, supporting natural antagonists of pest organisms). When formulating the general principles of integrated pest management it is necessary to use the elements of all these systems, as well as support their use.

In the territory of the CR it is desirable to facilitate the acceptance of using aids, tools and substances intended for monitoring plant pest organisms, since such monitoring is one of the basic preconditions for the routine use of integrated pest management.

The national provisions in force in the CR in general do not allow for any exceptions for a different timetable for control of professional testing of application equipment not used for spraying PP products and additional equipment for the application of PP products, which are used only on a small scale - see Article. 8, (3a) of Directive 2009/128/EC, therefore, in this respect, the NAP does not provide for any measures.

The manner of fulfilling the objectives and milestones of the Czech NAP cannot directly establish a new requirement or raise the administrative burden of agricultural entrepreneurs in the Czech Republic.

One of the methods used to ensure the milestones of the NAP are met is determining spatially and temporally defined areas in which the use of PP products represents a higher risk for non-target organisms and the environment (“hot spot management”). Among the main higher risk factors are:

- specific environmental conditions (e.g. territories with a high density of watercourses, with increased soil porosity, buffer zones for drinking water sources)
- the wide-spread and frequent use of one or more PP products in the framework of certain indications (crop + pest organism) in a particular territory in conjunction with other risk conditions, e.g. frequent rainfall or land threatened by erosion.

A. The objectives and milestones of the Czech NAP

Objective I. Limiting the risks associated with the use of PP products.

In the area of protecting public health:

Milestone I a) - adopt measures to limit cases of damage to health stemming from the use of PP products for persons applying the PP products and for persons entering the treated areas and the treated rooms.

Method of implementation:

- Legislative amendment to the powers of the MoA, including integrating its activities, findings and outputs with the agriculture sector.
- Improve awareness in the field of the PP products' direct risks to human health, for example, as regards the possible ways of informing persons likely to be exposed to spray drift.[12]
- Set up a system of professional advice in plant protection.
- To appropriately extend awareness and state supervision of professional plant product users' compliance with the obligations to the use of PP products when creating and maintaining public and private green spaces and the use of rodenticides when destroying rodents as plant pests, focusing on the areas used by the general public or vulnerable inhabitants.[13]
- Elaborate the legislative requirements for professional and amateur use of PP products
- Refine the national data collection system for cases of poisoning of both professional users and other persons[14].

Milestone I. b) - adopt measures to reduce the risks associated with the occurrence of residues in raw materials, food and feed of plant and animal origin.

Method of implementation:

- Improve awareness among the professional farming public, between food producers and distributors and between consumers, including information on the risks of combined use of PP products and the subsequent cumulative and aggregate exposure, using the professional capacities of NGOs.
- Extend state supervision over compliance with the obligations of professional users to the storage area for harvested plants and plant products. To also focus the content of basic and supplementary training courses for professional users of PP products for obtaining the professional capacity for handling PP products on ways for the safe post-harvest application of PP products including the area of storing

[12] See Article 10 of Directive 128/2009/EC.

[13] See Section 2 (1) (x) of the Phytosanitary Act.

[14] See Article 10 (2) of Directive 128/2009/EC.

plants and plant products. To set up a system of professional advice in plant protection.

- To ensure a system of effective controls for the presence of residues in raw materials and food of plant origin in the market network, including control of the correct indication of their origin and better communication and exchange of information between the CAFIA and the SPA.

Specific indicators of implementing the milestone:

- the number of samples with residues in food and feed;
- the number of samples containing mycotoxins in food and feed in samples taken before the harvesting of crops in the field.

Milestone I. c) - to examine the adequacy of existing national measures to limit the risks to human health and the environment, based on an assessment of authorised supplementary plant substances pursuant to Act No. 156/1998 Coll., on fertilisers, supplementary soil substances, supplementary plant substances and substrates and on agrochemical testing of agricultural soils, as amended (the "Fertilisers Act"). In the event that fertilizers contain substances falling within the scope of Regulation (EC) No 1107/2009 of the European Parliament and of the Council concerning the placing of plant protection products on the market and repealing Council Directives 79/117/EEC and 91/414/EEC (hereinafter "Regulation on PP products"), to examine the agreement of current procedures with Article 2 (1) of this Regulation and to adopt measures to start the evaluation of these substances pursuant to this Regulation.

Method of implementation: The MoA examines and, where appropriate, in conjunction with the CISTA and the SPA, proposes and extension of the requirements for submitting the data on the risks of supplementary plant substances authorised in accordance with the Fertilisers Act. To further examine whether the procedure when assessing fertilizers sufficiently excludes the possible conflict with Article 29 of the Regulation on PP products if the fertilisers contain substances falling within the scope of Article 2 (1) of this Regulation and which shall, in accordance with this Regulation, be assessed having regard to the fate and risk of these substances in the environment. The Ministry of Agriculture will propose, in conjunction with the CISTA and the SPA, legislative changes so that these conflicts no longer arise.

Milestone I. d) - adopt measures to limit the risks to the general public, based on the use of PP products in areas used by the general public or by vulnerable population groups[14].

Method of implementation:

- Legislatively amend the powers of the MoH, including integrating its activities, findings and outputs with the Ministry of Agriculture, in particular, to clarify, in the conditions of the CR, the definition of areas used by the general public or by vulnerable groups of the population[13] and the content of the Plant health Act in these areas requiring measures to reduce the risks to human health.

- To improve public awareness and that of towns, municipalities and professional users of the PP products in areas used by the general public or by vulnerable population groups[14].
- Set up a system of professional advice in plant protection.
- To decide on the concept of a control on compliance with the measures required by the Plant health Act to reduce the risks to human health in areas used by the general public or by vulnerable population groups[14].

In the area of water protection:

Milestone I. e) - adopt preventive measures to reduce the occurrence of residues in surface water and groundwater, with an emphasis on sources used or usable for supplying the population with drinking water.

Method of implementation:

- Methodologically and legislatively ensure the implementation of appropriate preventive measures in the buffer zones of water resources and ensure the availability of up-to-date information on the designated buffer zones for farming subjects – e.g. in the form of mapping layers in the LPIS.
- To legislatively amend the use low-drift technologies and the manner of complying with the requirements on the use of safeguard zones from water sources primarily based on agri-technical measures.
- To ensure greater communication between state administrative authorities, professional product users and water managers, in particular as regards the availability of information on the relevant metabolites of the active substances, preparations, the methods for their analytical determination and their toxicological properties.
- Improve awareness and communication among professional product users farming in the buffer zones of water resources and the safeguard zones, distances water management authorities and water managers set up a system of professional advice in plant protection.

Specific indicators of implementing the milestone:

- the number of legislative amendments ensuring the implementation of suitable prevention measures;
- the number of updates to the register of buffer zones for water resources;
- the number of newly announced modifications to the existing buffer zones for water resources;
- the number of seminars, publications and workshops aimed at providing information on the relevant metabolites of the PP products´ active substances, the methods for their analytical determination and their toxicological characteristics;
- the number of seminars, publications and workshops aimed at the transfer of information between water management authorities and water managers.

Milestone I. f) – adopt measures to increase the effectiveness of monitoring residues occurring in underground, surface and drinking water.

Method of implementation:

- Process a methodology for targeted monitoring of the relevant residues in surface water and groundwater based on knowledge of the links between the spectrum of crops cultivated and the PP products used, the character of the natural environment (e.g. hydrology, hydropedology and other characteristics of the territory), and, in particular, in the designated buffer zones of water resources; to assess the results of monitoring with regard to the above.
- To ensure the implementation of monitoring the relevant residues in surface and underground water in the context of surveillance and operational monitoring of surface water and groundwater.
- To ensure greater communication between the SPA, professional product users and water managers, in particular as regards the availability of information on the active substances, the relevant metabolites of the PP products' active substances, the methods for their analytical determination and their toxicological properties in relation to drinking, surface and underground water.

Specific indicators of implementing the milestone:

- the readiness of the targeted monitoring methodology;
- the number of monitoring facilities where monitoring of surface and groundwater is carried out;
- the number of WRBZ with targeted monitoring for the relevant residues;
- the number of seminars, publications and workshops aimed at providing information on the relevant metabolites of the PP products´´ active substances, the methods for their analytical determination and their toxicological characteristics.

Milestone I. g) **-** adopt legislative measures to increase the efficiency of controls on compliance with the principles of correct PP products´ use.

Method of implementation:

- Establish a system of flexible transmission of information to determine the occurrence of above-limit residues in surface, groundwater and drinking water between the river basin management enterprises, the CHMI, the "POVODI" (river basin management) enterprises, the SPA, water managers and the CEI.
- Establish a system of targeted and flexible controls on compliance with the principles of good usage and application of PP products, on the basis of the transmission of information on the occurrence of above-limit PP products occurring in water, in particular in the areas where above-limit residues were found in surface, groundwater and drinking water – hereinafter referred to as "endangered zones".

Specific indicators of implementing the milestone:

- the number and scope of data transmitted between the CHMI, the "POVODI" (river basin management) enterprises, the SPA, water managers and the CEI;
- the number of controls on compliance with the principles of good product usage and application and the number of shortcomings detected during these inspections carried out on the basis of introducing a system of targeted and flexible control.

Milestone I. h) **-** adopt measures to regulate the application of PP products in endangered zones.

Method of implementation:

- Define and prepare a system for registering and updating a list of endangered zones.
- Methodologically arrange and deploy appropriate ways of regulating the application of PP products in the endangered zones, including support for systems of growing crops that are less demanding on the use of PP products in combination with authorisation for applicable PP products by using the provisions of Section 38b of the Plant health Act.
- To analyse the possibility of introducing economic instruments, e.g. a sales tax on PP products unsuitable for use in systems of integrated pest management and to evaluate their real effect and impacts.
- To harmonise the implementation of the above measures with the preparation and outputs of the river basin management plans pursuant to the Water Act.
- To evaluate the real impact of the above measures on agricultural subjects, especially those farming in the buffer zones of water sources, and, according to the results, amend the subsidy policy of the CR (e.g. financial support for restricted land use).

Specific indicators of implementing the milestone: the number of endangered zones.

Milestone I. i) **-** reduce the risk of a negative effect on water during product usage in non-agricultural areas.

Method of implementation: to ensure the application of restrictive conditions for the use of PP products along roads and railways (on non-agricultural land), on a very permeable surface or other infrastructure close to surface water or groundwater, or on sealed surfaces with high risk of run-off into surface water or into the waste systems.

Milestone I. j) – to provide targeted support measures to reduce the above-limit occurrence of residues in drinking water supplies where suitable water quality is not achieved by regulating the application of PP products in endangered zones.

Method of implementation: create a system of targeted support for implementing measures for water preparing plants and water sources aimed at removing above-limit contents of residues when treating drinking water.

Specific indicators of implementing the milestone:

- the number of persons supplied with drinking water from sources with residues;
- the number of complaints to investigate cases of suspected improper application of PP products with regard to water protection;
- the number of samples with residues in surface water and groundwater in relation to the area of declared WRBZ.

In the field of environmental protection:

Milestone I. k) **-** reducing the environmental risks associated with the use of PP products in important areas in terms of nature and landscape protection (protected areas, areas where sensitive species occur, etc.), including non-agricultural land.

Method of implementation:

- Mutually tie the legal amendments and the resulting procedures, methodologies, etc. of the MoE and MoA and to complement the legislative and other measures to reduce the risks and negative impacts on non-target species and natural valuable territories.
- Improve mutual awareness among users of PP products, nature conservation authorities, plant health care authorities and the public.
- Set up a system of professional guidance in plant protection, with a focus on information about the risks and the subsequent minimisation of these risks.
- Propose legislative measures to reduce the risks associated with the use of PP products and a system of control to protect the environment and conserve biodiversity. If this increases the current burden on agricultural entrepreneurs in areas protected under Act No. 114/92 Coll., on Nature and Landscape Protection, as amended, then to ensure the relevant modification of existing financial support to agricultural entrepreneurs for restricted land use in these territories.
- To harmonise the systems of measures for agricultural activity limiting the risk to the environment in the context of supports and controls by the MoA, in particular to harmonise the legislative conditions in the framework of cross-controls (Cross compliance) and the standards for the maintenance of a good agricultural and environmental condition (GAEC) with the measures for compliance with the general principles of integrated pest management.
- Mutually harmonise the controls systems of state administration bodies (integrated control system), in particular the cooperation during controls by the CEI, the SPA and CISTA.

Specific indicators of implementing the milestone:

- the number of PP products authorised in the CR suitable for systems of organic agriculture, integrated plant production and integrated pest management with a low environmental burden;
- the number of practical measures taken to reduce the risks associated with the use of PP products in areas of importance to environmental protection;
- the number of controls in the context of supervision of compliance with the conditions for professional use of PP products in areas of importance to nature and landscape conservation and the number of shortcomings found during these inspections.

Objective II. Optimising the use of PP products without limiting the scope of agricultural production and the quality of plant products

Milestone II. a) - support for verifying and implementing and optimising the existing and developing the missing crop-focused non-chemical plant protection methods and protection methods with low PP products inputs available in the economic

and production conditions of the CR (with an emphasis on support for regional production of food and raw materials), while maintaining production quality (low levels of mycotoxins, etc.).

Method of implementation:

- To catalogue the existing systems of integrated pest management according to the crops or groups of crops used in the CR or suitable for use in the CR.
- To improve awareness towards professional PP products´ users, to ensure the publication and updating of information by remote access using professional non-governmental organisations.
- Set up a system of professional advice in plant protection.
- Create crop systems for integrated pest management with emphasis on the developing and using functional and economically viable non-chemical plant protection methods, and propose recommended procedures when selecting appropriate plant protection method with low inputs of PP products.
- Determine a recommended procedure and criteria when selecting appropriate PP products for integrated pest management systems and appropriate incentives for applicants for authorisation of these products.
- To formulate and implement a system of controls on compliance with the general principles of integrated pest management, including the requirements for expertise and the range of practical experience of the state plant health experts conducting the controls, and mutually harmonise and simplify the state administrative bodies' control systems (integrated control system).

Specific indicators of implementing the milestone:

- the number of physical persons accredited in the framework of the MoA advisory system as an adviser in plant protection;
- the number of PP products authorised in the CR suitable for systems of organic agriculture, integrated plant production and integrated pest management with a low environmental burden;
- the number of advisory centres aimed at replacing toxic PP products, preferably with non-chemical methods or less toxic PP products;
- the number of authorised minor [15] use PP products in the CR,
- the number of professional courses held to promote integrated pest management intended for agricultural entrepreneurs;
- the number of agricultural entrepreneurs participating in professional courses to promote integrated pest management.

Milestone II. b) **-** optimise the integrated pest management system for conditions of organic farming and integrated plant production systems.

Method of implementation:

[15] See Article 51 of Regulation (EC) No 1107/2009 of the European Parliament and of the Council.

- Analyze the existing system of organic farming and integrated plant production systems in the CR to identify specific features of both systems different from the integrated pest management systems and resources and the level of their support.
- To harmonise directives and methodologies for integrated production of fruit, vegetables and vines in accordance with the principles of integrated pest management (in force from 1 January 2014).
- Prepare integrated pest management systems in the form of recommended methodological procedures for implementing the general principles of integrated pest management, while respecting the specific attributes of organic farming and integrated plant production.
- To promote research and development of non-chemical plant protection methods.
- To harmonise and simplify the state administrative bodies' control systems (integrated control system) in integrated production systems and organic farming without the result being inconsistent with EU legislation in the field of organic farming. [16]

Specific indicators of implementing the milestone: the number of controls in the context of supervision of compliance with the general principles of integrated pest management and the number of shortcomings found during these inspections.

B. Quantitative evaluation performance indicators for the objectives of the Czech NAP:

1. Residues in foodstuffs of plant origin and plant raw materials intended for the production of food, grown and produced in the territory of the CR shall be reduced by 10 % by 2020 compared with the average in the reference period 2009–2010, taking into account deviations arising as a result of progress in the development of analytical technologies.[17]

   Assessable parameters: the proportion of samples from all the samples taken by the CAFIA in order to detect residues in food of plant origin and raw materials for its production originating in the CR without residues, the number of samples taken and analysed.

[16] Council Regulation (EC) No. 834/2007 on organic production and labelling of organic products and repealing Regulation (EEC) No 2092/91; and Commission Decision (EC) no 2008/889/EC amending Decisions 2002/747/EC, 2003/31/EC, 2005/342/EC, 2005/344/EC and 2005/360/EC in order to prolong the validity of the ecological criteria for the award of the Community eco-label to certain products.

[17] According to the CAFIA, with regard to technological advances, there will be an increase in the number of measurable (detectable) active substances of products and their metabolites (an increase of about 10 substances each year), the degree of sensitivity of detection, however, will stay the same (with differences in sensitivity depending on the use of the raw material or food - e.g. a difference for the same raw material intended for baby food and for other purposes).

2. The reduction in the area of groundwater formations with a non-compliant chemical state due to exceeding the environmental quality standards[18] based on the presence of residues.[19]

   Assessable parameter: area of groundwater bodies.

3. The fall in the number of surface water bodies, which, on the basis of the presence of residues, do not attain a good chemical condition, due to exceeding the environmental quality standards[15] or do not attain a good environmental condition or good environmental potential as a result of non-compliance with one or more environmental quality standards[16].

   Assessable parameter: area of groundwater bodies.

C. General performance indicators for the objectives of the Czech NAP

In addition to the specific indicators performance of some of the milestones of the NAP (see part A.) the following general indicators are considered as performance indicators for the NAP objectives:

- the number of individuals with a valid first, second and third degree certificate of professional capacity for handling PP products pursuant to Section 86 of the Plant health Act;
- the number of controls in the context of supervision of compliance with the conditions for the use of professional equipment for applying PP products in accordance with Section 61 of the Plant health Act and for handling PP products and the number of shortcomings found during these inspections.

[18] The environmental quality standard (EQS) is understood to be the concentration of a substance or group of substances in water, sediment or living organisms, which should not be exceeded in order to protect human health and the environment. The EQS for surface water is set by Government Order No. 61/2003 Coll., for groundwater by Decree No. 5/2011 Coll.

[19] Taking into account deviations due to the occurrence of residues of PP products that were not already permitted in the CR in the reference period (so called "old burdens")

4. Measures to ensure the NAP objectives and milestones are met.

In general - for all the objectives and milestones:

4.1. The MoE, MoA and MoH, including the subordinate ministerial offices and organisations, shall ensure the creation (improvement) of the system for monitoring the impact of PP products on the environment and non-target organisms (in accordance with the performance indicators for the NAP objectives) by 2020, primarily aimed at:

- collecting information on cases of acute and chronic poisoning of people by PP products (MoH)[14];
- a review of the system and strengthening both monitoring and the mutual exchange of up-to-date information, increasing the number of samples and analyses for residues in foodstuffs and drinking, surface and underground water (especially in endangered zones) – including residues of the active substances and their metabolites from prohibited and unregistered PP products (MoE, MoA and MoH);
- creating a methodology for identifying temporally and spatially defined areas that are most burdened by or threatened by PP products´ use. Here measures will be adopted to limit the use of PP products the risk for these areas, or their use will be restricted (MoE, MoA and MoH);
- creating an integrated monitoring system for cases of proven poisoning of wildlife or damage to plants or habitat by PP products comprising of a unified methodological procedure, a categorisation of poisoning or damage with regard to the manner of product use and cooperation among the relevant authorities and institutions (MoA and MoE).

4.2. The MoA, through the SPA and in collaboration with the MoH and the scientific research base [20], universities and professional non-governmental organizations shall prepare information programmes and documents for professional PP products´ users, other authorised persons and for the public. This will be published remotely in the form of gradually building an Internet "phytosanitary" portal, aimed at the correct and safe use of PP products, and at supporting the use of integrated plant protection systems and non-chemical methods for professional PP products´ users and at continuously updated the results from monitoring organisms harmful to plants. The phytosanitary portal will arise in several stages:

- by 2014 – an application of recommended crop-specific methodological procedures for implementing IPM for the most economically important crops (for the time being a stand-alone application on the SPA pages) – application running by 30 June.2013
- from 2014 onwards:
  - the gradual replenishment of crop-specific methodological IPM procedures for other crops
  - developing and transferring (linking) existing SPA applications dealing with monitoring, forecasts and warnings to the phytosanitary portal

[20] It will be a "public research institution", pursuant to Act No. 341/2005 Coll., on Public Research Institutions, as amended, or a "research organisation", pursuant to Act No. 130/2002 SB., on the Support of Research and Development from Public Funds and on the Amendment to Some Related Acts (the Act on the Support of Research, Experimental Development and Innovation), as amended.

- developing and transferring (linking) existing SPA applications dealing with plant protection products to the phytosanitary portal
- altering the current digital registry of authorised PP products, so that the user can export the user sets (in particular an overview of "crop, pest, group of authorised PP products"), including easy data filtering for the conditions for using the PP products with regard to protecting water and the environment; with a direct link to the PP products' instructions for use and the possibility to print out the set and send it by e-mail,
- setting up a plant health advisory service on the Internet (linked to an accredited plant health advisor)
- construct the option of a user profile in the portal - automatically sends topical information, a local connection to monitoring results with forecasts and warnings on the occurrence of organisms harmful to plants
- supplementing the links to related information systems from the scientific-research base and universities.

4.3. The MoA, in coordination with the SPA, associations of professional PP products´ users and NGOs, shall ensure the establishment of a plant protection advisory service by 2014 and optimise it by 2015. Its aim will be to acquire and transfer information on the environmentally friendly plant protection methods available aiming towards:

- continuing/extending the accredited MoA advisory service and creating an environment for the emergence of independent advisory services in plant protection;
- coordinating vocational education **(**training) of all (even non-accredited) plant protection advisors throughout the advisory services, the training's main topic will be crop-oriented methodological procedures for integrated pest management and organic farming and the creators of these procedures should also be the ones training the advisors;
- coordinating the training of professional teaching staff in the area of plant health in schools with sectoral disciplines and ensuring secondary and tertiary education graduates in a plant health field can obtain professional capacity for handling the PP products;
- support for implementing the monitoring of organisms harmful to plants at the regional and local level by professional product users and plant protection advisers;
- establishing and running advisory centres aimed at replacing toxic PP products, preferably with non-chemical methods or less toxic PP products,
- support for demonstrations of functional and economically viable non-chemical methods and methods with low inputs of PP products;
- ensuring the balanced advice in the area of PP products´ use when establishing and maintaining public and private green spaces.

Implementing this measure will be based on incorporating the plant protection advisory services into the forthcoming Rural Development Programme of the CR for 2014–2020 and on an analysis of existing national systems of agricultural advisory services relating to it or it is possible to use them in the field of integrated pest management, and on recommendations of how to optimise the support available for advisory services from private and public sources.

4.4. By 2014 the SPA will raise awareness among product manufacturers and distributors about the requirements for product labelling pursuant to Commission Regulation (EU) No. 547/2011[21] so that the instructions for use are sufficiently clear and unambiguous.

4.5. By 2014 the MoA, in cooperation with the MoH, the CISTA and SPA, will verify the adequacy of the existing national measures to limit the risks to human health and the environment, based on an assessment of the supplementary plant substances authorised under the Fertilisers Act.

4.6. The MoE shall ensure that from 2013 the impact of product use on non-target plant crops and on non-target invertebrates and non-agricultural land will be monitored, the results obtained are regularly assessed and professional product users are familiarised with the results of this assessment.

4.7. Bt 2015, the SPA will propose general legislative amendments to the conditions for the sale of PP products to end users, in particular, to non-professional PP products´ users; with a resolution on the requirements for Internet sales and its control.

4.8. From 2013 the SPA will focus on the area of detecting unauthorised PP products in the CR, during their importation, transfer and sale in the territory of CR, including greater involvement of the Customs Administration and increasing the number of such targeted checks on the market by 20% (compared to 2010). While the SPA will make use of a database of organisations concerned with waste usage to control the supply of PP products (parallel trade and standard approval - Section 60 of the Plant health Act) in order to create the prerequisites for a more efficient detection of unauthorised PP products and the undeclared supply of PP products to the CR, and also in terms of the obligations laid down by the Packaging Act and the Waste Act. [22]

4.9. The MoA and the SPA will examine the possibility of legislative amendments to the Plant health Act, which would streamline the prevention, control and sanctions for placing on the marketing and using unauthorised PP products and counterfeits. As of 2015 the Ministry of Finance of the CR shall ensure the legislative extension of the Customs Administration’s competences for detecting unauthorised and undeclared supplies of PP products to the CR, at least within the scope of the Customs Administration’s competences under Act No. 350/2011 Coll. [23]

4.10. As of 2013, the SPA and the CEI shall make available to each other - to an agreed extent - data in the databases on controls carried out on compliance with the obligations

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[21] See Annex 1, (1) (m) of Commission Regulation (EU) No. 547/2011, implementing Regulation (EC) No 1107/2009 of the European Parliament and of the Council as regards labelling requirements for plant protection products.

[22] By comparing the data in the databases of the relevant organizations and the SPA data, it is possible to verify whether the parallel importers registered with the SPA are also registered in the system of the pertinent organisations concerned, thus meeting the notification duty, and, vice-versa, whether entities in the register of the pertinent organisations notify the SPA about data in accordance with the wording of Section 60 pf the Phytosanitary Act.

[23] Act No. 350/2011 Coll., on Chemical Substances and Chemical Mixtures and Amending Certain Acts (the Chemical Act).

with regards to placing PP products on the market in the CR, and the SPA and CEI shall use the information thus obtained for controls in the framework of their competences.

4.11. By 2014, the MoA, in cooperation with representatives of secondary agricultural schools and universities, shall analyse the scope and quality of plant health education (framework educational programmes, study programmes) at agricultural high schools and universities, both in the context of further continuing plant health specialisation, and, in particular, with regards to the sufficient awareness of all the graduates of agricultural colleges and universities about the importance and main principles of plant health care in relation to human and animal health and the environment.

4.12. By 2014 the MoE will analyse the possibility of including the following into the system of vocational plant health education by using EU subsidy programmes for rural development after 2013:

- basic courses and additional training for agricultural entrepreneurs, the completion of which is laid down by the Plant health Act for obtaining the certificate of professional capacity for handling the PP products;
- advisory centres created to implement measure 4.3.; and
- agricultural or forestry properties belonging to a university pursuant to Act No. 111/1998 Coll.[24], and school farms pursuant to Decree 108/2005 Coll. [25]

4.13. By 2014, the MoA, in cooperation with CAAS, will formulate the priorities for plant health research aimed at:

- (in cooperation with the MoH or MoE) methods for determining the risks associated with PP products´ use on human health, non-target organisms and the environment, methods of monitoring these risks and developing methods and measures for managing (eliminating) these risks;
- improving the integrated pest management systems for individual crops or crop groups;
- developing and updating economic thresholds of the harm caused by organisms harmful to plants;
- developing non-chemical methods, methods with low inputs of PP products including breeding plant genotypes with high resistance to biotic factors and developing anti-resistance strategies.

The priorities formed in this manner will be subsequently applied during the standard revision of departmental programmes for agricultural research.

4.14. By 2016, the MoA, MoH and MoE shall create a system for mutual cooperation and coordination when awarding research priorities aimed at the protection of plants and plant products, or the impact of PP products on human health and the protection of non-target organisms.

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[24] See Section 35 (1) of Act No. 111/1998 Coll., Higher Education Institutions and on Amendment to Other Acts (the Higher Education Act) as amended.

[25] See Section (13) of Decree No. 108/2005 Coll., on school educational and accommodation establishments and special purpose scholastic facilities, as amended.

4.15. The MoA, in cooperation with the CAAS, specialist associations of professional PP products´ users and specialised professional associations, shall analyse the system of awarding and assessing plant health research projects and, according to the result of the analysis, shall propose changes in this system by 2015, in order to increase the effectiveness of research focussing it on topics with greater use of the results of research in agricultural practice and with regard to the needs caused by the amendment to the plant health legislation.

4.16. The MoA, in cooperation with the SPA, the CAAS and ministerial research institutes and agricultural universities shall, by 30 June 2013, make an inventory of the certified methodologies and other results of an application character (utility models, patents, technology, pilot plants, etc.) with a plant protection theme published as results of MoA projects (and projects of other providers, including the results of institutional support) and propose options for connecting information systems with these results, including their publication by remote access or publication of the possibility of their use in return for payment.

In the area of protecting public health:

4.17. By 2015, the MoA, in cooperation with the SPA, shall prepare national policy principles in the field of substituting the substances used in plant protection, which are to be replaced, with regard to human health and environmental protection (Article 4 and 50 of the Regulation on PP products).

4.18. By 2015, the MoA, in cooperation with the MoH or the MoE and the relevant ministerial organisations (SPA, NIPH) shall draw up a list of authorised PP products in the CR, which contain active substances which do not comply with the criteria for the approval of active substances referred to in Article 4 and Annex II to the Regulation on PP products. PP products presented in this list will be reviewed in accordance with Article 44 of the Regulation on PP products. In the event of confirming the presence of a PP product not present on this list, but containing an active substance which does not meet the above criteria, in the market network in the CR, the PP product will also be reviewed pursuant to Article 44 of the Regulation on PP products.

4.19. By 2015, the SPA, in cooperation with the MoH, shall formulate the basic principles of good practice when handling PP products by professional users of PP products: e.g. The "Code of PP products´ Use" = minimum requirements for using the PP products (storage, preparation of application liquid, regulating and cleaning the application technology, disposing of packaging and remnants, only using authorised PP products, the risks associated with the use of unauthorised PP products and methods for their identification) - related to "good plant protection[26] practice".

[26] See Article 3 (18) of Regulation (EC) No. 1107/2009 of the European Parliament and of the Council concerning the placing of plant protection products on the market and repealing Council Directives 79/117/EEC and 91/414/EEC.

4.20. By 2015, the SPA, in conjunction with the MoA (or the NIPH), shall formulate criteria for the approval and use of PP products by non-professional PP products´ users, e.g. the restriction of PP products classified as toxic and intended for amateur use, determining the size and suitability of the packaging, with the possibility of simple and safe dosing, leaflets = providing more information, support for ready-to-use packaging.

4.21. The MoH, in conjunction with the SPA, shall, in the form of ongoing education, draw attention to the prohibition on the use of PP products by vulnerable groups (pregnant women, nursing mothers, adolescents, etc.) - see Decree No 288/2003 Coll.[27], the general public - see Annex XVII of Regulation (EC) No 1907/2006[28] of the European Parliament and of the Council; and, where appropriate, to the unsuitability of working with certain PP products, e.g. for allergic persons.

4.22. By 2014 the MoH shall prepare the principles for implementing measures to minimise the risks for human health when applying PP products in areas used by the general public or by vulnerable groups[14], including considering the possibility of recommending a list of PP products acceptable in terms of the risk to human health for use in these areas.

4.23. By 2015 the MoA, in cooperation with the SPA, shall ensure

- an appropriate form of education about the obligations when handling PP products applicable to professional PP products´ users in the areas of establishing and maintaining public and private green spaces and eliminating rodents as plant pests;
- targeted methodologically focused post-registration controls on the professional use of PP products also in the areas of establishing and maintaining public and private green spaces and eliminating rodents as plant pests.

4.24. By 2014 the MoA, in cooperation with the MoE and the SPA, shall ensure

- the incorporation of the legal requirements for handling PP products´ packaging or its disposal into the educational curriculum for obtaining the certificate of professional capacity to handle the PP products pursuant to Section 86 of the Plant health Act, and proving this knowledge during tests before obtaining and renewing the second and third degree certificates;
- an appropriate form of education for all groups of professional users, distributors and importers of PP products about their duties relating to the handling or disposal of packaging from PP products.

4.25. By 2014, the MOA, in close cooperation with the MoE, the Czech Crop Protection Association and through the SPA, shall prepare information about the legal requirements for handling packaging from PP products for distributors selling PP products to non-

[27] Decree No 288/2003 Coll., laying down the work and workplaces that are prohibited to pregnant women, breast feeding, mothers until the end of the ninth month after childbirth and adolescents, and the conditions under which adolescents may, exceptionally, carry out this work, due to preparing for an occupation;

[28] Annex No. XVII to Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the registration, evaluation, authorisation and restriction of chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC.

professional users, who, according to the regulations in force, are required to learn them and their regular updates, when selling PP products to non-professional product users.

4.26. By 2016, the MoE, in conjunction with the MoH, product manufacturers and organisations concerned with waste usage, shall carry out an analysis of the options for decontaminating packaging from PP products and its subsequent recycling or re-use, e.g. energy recovery, including making an inventory of the amount of packaging from PP products with an active substance, which can be decontaminated[29] from the packaging.

4.27. By 2016, the MoE, MoA and the SPA shall, in connection with measure 4.26., assess the possibility of integration or cooperation during a control of the placing on the market and use of PP products referred to in the Plant health Act and during a control of handling the packaging after applying the PP products according to Act No. 185/2001 Coll., on Waste and Amending Certain Other Acts, as amended (the "Waste Act") with the aim of increasing the effectiveness of preventing and detecting unauthorised PP products.

4.28. The MoE, in cooperation with the Ministry of Regional Development and the Union of Towns and Municipalities of the CR, shall verify - for instance during the preparation of the new Waste Act - the efficiency of controls by municipalities on compliance with the legal conditions for waste treatment with a focus on the disposal of packaging from PP products.

4.29. By 2014, the MoA, in cooperation with the SPA, shall support adequate education of professional PP products´ users about installing machinery with cleaning mechanisms for packaging of the PP products and for cleaning and rinsing the PP products from mechanised plant protection equipment.

4.30. By 2014, the MoA, by means of the CAFIA in collaboration with the scientific research base[22] and universities, shall analyse the level of risk of residues occurring in the market network intended for end consumers, where non-professional PP products´ users can also supply food and, according to the result, recommend solutions for eliminating the risks.

In the area of water protection:

4.31. By 2014, the MoE, in conjunction with professional interest associations, shall prepare an amendment to Decree No. 137/1999 Coll. laying down a list of water reservoirs and the principles for determining and changing the buffer zones for water resources or draft a legislative amendment to the provisions of Section 30 of the Water Act.

4.32. By 2015, the administrator of the register of water resource buffer zones (WRBZ), in accordance with Section 22 of the Water Act, shall update this register and adopt

[29] For more information see ECPA http://www.ecpa.eu/article/pesticide-use/roadmap-establishing-container-management-programme-collection-and-disposal-em

measures leading to making the updated data on the WRBZ available to the public and their interconnection with existing information systems (e.g. the LPIS).

4.33. By 2014, the MoA, in cooperation with the MoE and the SPA, shall ensure the availability of up-to-date information concerning active substances, their relevant metabolites, the methods of their analytical determination and toxicological characteristics in relation to drinking, surface and underground water for water managers and, where appropriate, the general public.

4.34. By 2014, the MoE, in cooperation with the MoA and the SPA, shall provide water managers with rules for targeted residue monitoring in surface and groundwater used to supply the population with drinking water.

4.35. By 2015, the MoE, in conjunction with its ministerial organisations and the SPA in cooperation with the scientific research base[22] and universities, shall prepare the principles of residue monitoring in surface water and groundwater, in the framework of surveillance, operational or pilot monitoring of surface water and groundwater in the CR. Part of these principles is also the manner of mutually transmitting data on the occurrence of residues in surface water and groundwater between the SPA and the CHMI/River Basin Administrators and producers of drinking water

4.36. By 2014, the MoE, in cooperation with the MoA, shall propose and operate a system for transmitting information on the occurrence of residues in surface water, groundwater and drinking water between the "POVODI" enterprises, the CHMI, SPA, producers of drinking water and the CEI. When proposing the system, the currently working records will be taken into account and used as much as possible.

4.37. By 2015, the SPA shall introduce a system of flexible and targeted controls on compliance with the principles of correct PP products´ use and application in response to a notification by the CHMI/River Basin Administrators of a documented finding of a product in above-limit concentrations and in areas with a positive above-limit occurrence of residues in surface, underground or in drinking water (endangered zones).

4.38. By 2014, the SPA, during a post-registration control, has a methodically targeted focus on the use of PP products in the WRBZ for the most risky situation, in particular for PP products applied to soil (before sowing, before germination or shortly after germination), which are most likely to infiltrate the water.

4.39. By 2015, the MoE, in cooperation with the MoA and the relevant ministerial organisations, shall prepare a methodology for determining endangered zones in terms of the risk of above-limit residues occurring in surface and groundwater, including the manner of keeping records and updating them.

4.40. By 2014, MoE, MoH and MoA shall ensure a regular annual evaluation of the occurrence of residues in surface water, groundwater and drinking water, with the participation of the competent authorities and institutions concerned under the ministries of agriculture, environment and health. The MoE and the MoA shall include the results of this evaluation into the annual "Report on the State of Water Management in the Czech Republic".

4.41. The MoA, in cooperation with the MoE, the SPA and professional interest associations, continually updates the risk of PP products with regards to contamination of surface and groundwater, and takes the result into account when forming the criteria for evaluating PP products with regard to the exclusion or restriction of their use in WRBZ.

4.42. By 2015, the MoA, in cooperation with the MoE and the SPA, shall prepare the principles of management in a WRBZ for drinking water sources (in particular water reservoirs), primarily based on agricultural-technical measures (tillage, crop rotation) with a focus on principles for using PP products applied to soil (before sowing, before germination or shortly after germination), especially herbicides, in terms of the threat to surface and groundwater, that being on a sloping terrain or in areas with increased risk of rapid infiltration of water into the soil in relation to agricultural drainage systems. The above will be linked with the approval for applicable PP products by using the provisions of Section 38b of the Plant health Act. By 2015, the MoA, in cooperation with the MoE, shall carry out an economic analysis of the impact of the proposed measures in the WRBZ on the entities working there and draw up a proposal taking into account these impacts into the subsidy policy of the CR.

4.43. By 2014, the MoA shall prepare a legislative proposal on the use of equipment for applying PP products in buffer zones for water protection and in the vicinity of non-target land, which allows the maximum possible shortening of the distance set by legislation, especially by the directional use of low-drift equipment for applying PP products classified by the SPA: according to type of crop, soil and bedrock permeability, proximity to water sources and non-target organisms (protected areas, areas open to the public), in the vicinity of transport arteries.

4.44. By 2016, the MoA shall examine the possibility of systematic support for installing technological equipment and technologies for reducing the content of residues in drinking water in constructions for water preparing plants using water resources with an above-limit residue content.

4.45. By 2016, the MoE shall create, on the basis of the above principles and supporting documents, a detailed methodology for the principles of defining water resource buffer zones and the measures to be applied in the buffer zones.

In the area of reducing the risks associated with PP products´ use in terms of non-target organisms and areas of importance for nature and landscape protection:

4.46. By 2014, the MoE, in cooperation with the MoA, shall examine the practical working of the legislative change in the field of PP products´ use from the standpoint of their impacts on non-target organisms and areas of interest for nature protection and it shall propose any possible optimisation.

4.47. By 2014, the MoE shall prepare the principles for implementing policy measures to minimise the risks of PP products´ application for the environment, non-target organisms and biodiversity. By 2015, the MoA, in cooperation with the MoE, shall carry out an economic analysis of the impact of the proposed measures on farming entities and draw up a proposal taking into account these impacts into the subsidy policy of the CR.

4.48. From 2014, the SPA, on the basis of the results of a post-registration control and other investigations in the event of confirming the negative effect of PP products on non-target organisms, regularly evaluate the risk of using certain categories of PP products with a view to their negative impact on non-target organisms and will regularly familiarise the MoA and MoE with the results of the evaluation and, where appropriate, agricultural practices, for example, in the form of specially organised seminars published by remote access.

4.49. From 2014, the SPA and the MoE shall create an information exchange system on the PP products' effects on wild fauna; the information source shall comprise of studies of the PP products' risks, available during the licensing procedure, the results of monitoring and post-registration controls of PP products´ application, the practical findings of nature protection bodies.

4.50. From 2015, the MoE, in cooperation with the MoA, shall create a simple and quick system for publishing information on the territorial demarcation of protected areas and sites where species of animals sensitive to the PP products occur and on the conditions and recommendations for using the PP products in these areas so that professional PP products´ users can easily obtain and check the relevant requirements; the system should be based on proven forms (e.g. in the context of cross-compliance, the FARMÁŘ (FARMER) portal, etc.).

4.51. By 2014, the MoA, in cooperation with the SPA, the State Veterinary Administration, the BRI and the Beekeepers Union shall:

- analyse the extent of using insecticides that are high-risk for bees in connection to the risks of mass bee poisoning and use the result when adopting measures to eliminate the risks;
- analyse knowledge from abroad on the mechanism of neonicotinoid seed treatments' side effects on bees, stimulate domestic research and ensure a targeted post-registration control on PP products to verify the connection between applying neonicotinoids and the state of health of bees in the CR.

4.52. By 2014 the MoA and the MoE, in cooperation with the SPA, the State Veterinary Administration (SVA), the Forestry and Game Management Research Institute of Forestry and Hunting and the Czech Hunting Union shall:

- analyse the available findings from abroad on the level of risk, especially from PP products already authorised (e.g. the neonicotinoids) for seed treatment in terms of the protection of non-target vertebrates and use the result of this analysis, in conjunction with the SPA, to ensure targeted monitoring to verify the risk of neonicotinoids as seed treatments;
- review existing legislation on game protection during PP products´ use and update it so the legislative requirements are realistic for both professional PP products´ users as well as for the supervisory authorities, and correspond to the current level of risk with regard to the lower toxicity of authorised PP products.

4.53. The MoA, through the SPA, shall ensure that the controls implemented by the SPA focus on control sites for the possible presence of PP products with the active substance carbofuran, and that, in the case of such a finding, the SRS orders the disposal of the PP

products as unusable hazardous waste. If there is state financial support at the MoA level, the SPA will ensure the disposal of these PP products.

4.54. From 2014, the MoA shall ensure that, in accordance with the legislation in force and the methodical procedure of the Research Institute and Fish Culture and Hydrobiology in Vodňany, the procedure of state administration bodies (the SPA and SVA) and local government (Environmental Departments at the Municipal Offices) is coordinated during local investigations of cases of accidental deaths with suspected fish poisoning by PP products.

4.55. By 2012 the MoE, in cooperation with the MoA, shall propose a system of legislative measures for environmental protection, including support for biodiversity, to reduce the risks associated with PP products´ use and, in conjunction with the competent supervisory bodies, to harmonise and simplify the state administration bodies' control systems (an integrated control system), in particular cooperation during CEI and SPA controls.

4.56. By 2015 the MoA and the MoE, in cooperation with the SPA and CEI, shall harmonise the systems of measures for agricultural activity limiting the risk to the environment in the context of supports and controls by the MoA, in particular the control conditions in the framework of cross-compliance and the standards for maintaining a good agricultural and environmental condition (GAEC) with the measures for compliance with the general principles of integrated pest management.

In the area of optimising the use of PP products without limiting the scope of agricultural production and the quality of plant products:

4.57. By 30 June 2013, the SPA, in cooperation with the CISTA, the scientific research base[22], professional interest associations and with professional associations of professional PP products´ users, shall remotely publish the available methodological procedures for implementing the general principles of integrated pest management, whilst assessing the state of the (national) certified methodologies and directives (e.g. SISPO) already published, which include at least some elements of integrated pest management and decide on their use in the form of recommendations when carrying out the general principles and crop specific principles of integrated pest management, respectively, on the expediency of editing the publication Methodological Manual on Plant Protection against Diseases, Pests and Weeds, I. Field Crops[30].

4.58. By 30 June 2013, the MoA, by means of the CISTA and SPA, compiles information on protection methods for organic farming and, in cooperation with the relevant horticultural associations and unions, harmonises the directives and guidelines for integrated plant production with the principles of integrated pest management and publishes them by remote means.

[30] Collective: Methodological Manual on Plant Protection against Diseases, Pests and Weeds, I. Field Crops Published by the Czech Phytosanitary Society, Prague 2008, 504 pages. ISBN: 978-80-02-02087-5.

4.59. From 2013, the MoA shall ensure that the recommended methodological procedures supporting the implementation of the general principles of integrated pest management for specific crops:

- give priority to creating or verifying institutions dedicated to plant health research;
- are created on the basis of real economic and other objective conditions for growing crops in the CR, are as simple as possible and both verifiable and flexible;
- are subject to objective and practical peer review prior to official publication, especially by the representatives of crop growers affected by the methodology (the crop unions and associations), in terms of their applicability in field conditions.

4.60. By 2015, the MoA, in coordination with the SPA, the scientific research base[22] and educational organisations, with specialist associations of professional product users and non-governmental (ecological) organisations, shall ensure a system for practical demonstrations of new and updated integrated pest management methods in the framework of vocational training in plant protection and the certification of advisors.

4.61. By 2014, the MoA, through the SPA and in cooperation with the scientific research base[22], product manufacturers, the Czech branch of the International Biocontrol Manufacturers Association and the Czech Plant Protection Association, shall prepare for distributors a system for updating the information on environmentally friendlier procedures and alternative plant protection, representing a low risk, which distributors, according to current regulations, are obliged to provide for non-professional PP products´ users.

4.62. By 2015, the MoA, in conjunction with the relevant secondary schools and universities, shall ensure that in all areas of agriculture and forestry aimed at growing plants there is a greater focus in the secondary and university education system on teaching ways of eliminating the risks associated with PP products´ use by implementing non-chemical methods and protection methods with low inputs of PP products, in particular on obtaining information on the use of environmentally friendly plant protection methods, including integrated pest management and organic farming.

4.63. The SPA, as the professional state plant health care body, will continue to monitor the occurrence of and changes in the numbers of organisms harmful to plants and the conditions for their harmful occurrence from the national perspective as part of a general survey focused on the occurrence of organisms harmful to plants pursuant to the International Plant Protection Convention [31] and the principles of the EPPO. This objective will correspond to the extent of monitoring and in particular its harmonised and publicly available methodology, compliance with which will be binding for the SPA.

4.64. By 2014, the SPA, in conjunction with professional associations of professional PP products´ users, creates a transparent system for monitoring professional PP products´ users' compliance with the general principles of integrated pest management, preferably based on the principle of critical points control and continuously consulted upon with other EU Member States. The MoA lays down the requirements on the level of expertise

[31] Council Decision 2004/597/EC of 19 July 2004, approving the accession of the European Community to the International Plant Protection Convention as revised and approved by Resolution 12/97 of the 29th Session of the Conference of the Food and Agriculture Organisation (FAO) in November 1997.

and the scope of practical experience of the state plant health experts carrying out these controls.

4.65. By 2014, the MoA and MoE, in cooperation with the competent departmental supervisory bodies, harmonise and simplify the state administration authorities' control systems (an integrated control system) in integrated plant production and organic farming systems.

4.66. By 2015 the pertinent departments, in cooperation with the scientific research base[22], shall ensure greater support for:

- developing anti-resistance preventive strategies in plant protection and (especially) their application in practice, including the introduction of varieties resistant to biotic factors (MoA);
- the development of expert systems (in particular with the use of software and remote data transfer) for predicting the occurrence of organisms harmful to plants and decision-making tools in plant protection and their application in practice (MoA);
- the development of functional and economically viable non-chemical methods of plant protection, especially for crops intended for direct consumption (MoA);
- optimising the diagnosis of organisms harmful to plants by promoting the introduction of faster, more sensitive and more specific diagnostic methods (MoA);
- developing and standardising methods for determining residues in raw materials, food, feed, water and soil (MoA, MoE, MoH);
- developing methods for assessing the risk to human health and the environment (MoA, MoE).

4.67. By 2015, the MoA, through the SPA, ensures a simplification of the authorisation system for using aids, tools and substances, intended solely for monitoring organisms harmful to plants in the territory of the CR.

4.68. By 2014, the MoA, through the SPA and in cooperation with PP products´ manufacturers and the Czech Plant Protection Association, shall prepare detailed principles for recommended use:

- of low-drift technology when using the PP products, and
- technology to prevent drift when sowing treated seeds, including consideration of the legislative imposition of an obligation to use "deflectors" to prevent dust drift when sowing maize and sunflower treated with an insecticide, from the standpoint of eliminating the risk to adjacent land and non-target organisms.

4.69. The MoA supports the introduction of less risky plant protection alternatives (PP products based on micro-organisms and a natural basis in general) by 2020.

5. Material and Financial Implementation of the NAP

The implementation of a large number of individual NAP measures puts high demands on institutional cover. The MoA will therefore strengthen its specialist division, in the framework of its organisational structure, to ensure strategic management during the implementation of the NAP.

The Plant health Council, established pursuant to Section 71 (1) (d) of the Plant health Act will be used for the professional support of MoA activity, especially the coordination working group for preparing the NAP, which has been working under the coordination of the MoA since 2011. Examples of the tasks that will be delegated to the coordination working group (CWG), which will have the status of an advisory body to the Director of the Specialist Division of the MoA, include:

- interaction during further concretisation and updating of tasks
- developing standpoints to individual proposals for a ruling,
- evaluating the experience gained when implementing the measures,
- recommendations for further developing the programme,
- assessing fulfilment of the objectives,
- determining the controllable outputs of the NAP and the method of evaluating them.

CWG members will be paid compensation for their activities with funds from the MoA to the extent of travel costs and, where appropriate, adequate remuneration. The CWG shall meet at least twice a year and will assess the implementation of the NAP objectives and milestones and the implementation of individual measures, to assess the effectiveness of the financial resources invested and modify individual measures depending on the results.

The NAP will be implemented from 2013. Continual assessment of its implementation will be twice a year on the basis of the CWG minutes. An annual report on NAP implementation will be written up every year and submitted to the ministers of health, agriculture and environment for information. The NAP update will be prepared on the basis of a draft submitted by the ministers of agriculture, health and the environment to the Government for approval by resolution every 5 years at the latest. The next update will be ready by the end of 2017.

Implementation of the NAP objectives does not assume expenditures of an investment nature. An analysis of the financial demands of all 69 proposed measures to implement the NAP (see chap. 4) shows that 40 NAP measures can be carried out within the existing working capacities and duties of state administration in the respective branches of agriculture, health and the environment, without additional demands on the state budget. Implementation of the NAP is based on the existing system of state supervision of the fulfilment of obligations arising from legal regulations, thus the tools for implementing the NAP determine the focus of the inspection activities of the supervisory authorities, in particular the State Phytosanitary Administration and the Czech Environmental Inspectorate. A number of the NAP measures are aimed at increasing the effectiveness of the existing control activities, e.g. the mutual exchange of monitoring results, therefore, extra costs are not assumed in this area.

A total of 18 measures are aimed at transforming existing data collection systems and at obtaining, transmitting and evaluating information, with the majority being implemented by 2014–2016. The extra costs incurred for implementing these measures are estimated at around

CZK 25 million per year and financial means will be requisitioned in the context of the MoA, MoE and MoH budgets. According to the share these ministries have in implementing these measures the MoA share can be estimated at around 61% (about CZK 15,326 thousand), the MoH share is around 8% (about CZK 2,000 thousand) and the MoE share is around 31% (about CZK 7,674 thousand).

Non-investment costs, in particular for building or transforming and maintaining professional databases and professional methodologies, at an estimated amount of approximately CZK 8 million a year, will be covered by expenditures of an operational nature from the budgets of the state institutions that run them. The funds will be requisitioned in the context of the MoA, MoE and MoH budgets. In all it concerns 11 of the proposed measures and the share of the relevant ministries and ministerial institutions for meeting them can be estimated at approximately - 67% for the MoA (about CZK 5,375 thousand, of which about CZK 2,200,000 for the State Phytosanitary Administration and CZK 1,000,000 for the Central Institute for Supervising and Testing in Agricultural), the share of the MoH is around 10% (about CZK 759,000), and the MoE share is approx. 23% (about CZK 1,866, 000). The coordination and control of implementing the NAP will represent administrative demands on the part of all three of the participating ministries, which will require total expenditures of approximately CZK 1.5 million per year; of which about CZK 1 million will come from the MoH budget (e.g. administration of annual and evaluation reports, the drafting of CWG standpoints, organising CWG negotiations), and CZK 250 thousand from the MoE and MoH budgets alike (providing expert opinions on implementing the measures from the perspective of competencies, organising expert departmental meetings to assess implementation of the NAP).

In the case of support for research, no increase in funds for research in direct connection with the NAP is expected, but there will be a standard use of existing funds for agricultural research from the budget section of the MoA in the form of institutional support for research organisations in the field of applied agricultural research and development, currently in the framework of the programme “Comprehensive Sustainable Systems in Agriculture”, in accordance with Act No. 130/2002 Coll. [32] Research support for meeting the NAP objectives will be mainly implemented by setting the priorities objectives of the supported research.

The costs for meeting the legal duties resulting from the need to implement the provisions of Directive 2009/128/EC and the impacts on stakeholders are enumerated in the explanatory report to the amendment to the Plant health Act, which transposes Directive 2009/128/EC. The costs associated with the obligations of municipalities pursuant to Section 52 of the Plant health Act have already been spent by the municipalities in connection with applying the PP products. Producers of plant commodities and other professional PP products´ users will be burdened with the costs in connection with the mandatory application of the general principles of integrated pest management and with the change to the system of certification of professional capacity to dispose of the PP products. [33]

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[32] Act No. 130/2002 Coll., on the Support of Research and Development from Public Funds and on the Amendment to Some Related Acts (the Act on the Support of Research, Experimental Development and Innovation), as amended.

[33] Act No. 199/2012 Coll., amending Act No. 326/2004 Coll., on Phytosanitary Care and Amending Certain Related Acts, as amended, Act No. 455/1991 Coll., on Trade Licensing (the Trading Act), as amended, and Act

The effects of integrated pest management cannot be estimated, it will depend on the economic conditions at the time the provisions concerned enter into force (1.1.2014). At the time of preparing the NAP (2012) it is estimated there are around 8000 holders of a valid certificate of professional capacity corresponding to the second and third degree, pursuant to the amendment to the Plant health Act. The calculated price is CZK 200 for taking the tests at the SPA and CZK 2500 to 4500 to graduate the course for obtaining knowledge. In connection with the implementation of the obligations under Directive 2009/128/EC there will be an estimated increase of up to 1000 people, of which some will have the required education; i.e. the costs can be estimated at up to CZK 300,000 for entry into business/employment in the sector. The total cost for refresher training is estimated at approximately 900,000 CZK/5 years (1000 CZK/person for 5 years).

According to the amendment to the Plant health Act it is now necessary to ensure the training of persons to obtain the first degree certificate and the issue of these certificates. This concerns about 20,000 persons, training costs are estimated at 1000 CZK/person, an estimate of the total cost is about CZK 20 million every 5 years (obligation to update knowledge). The cost of drawing up a plan of aerial spraying of PP products is estimated at about 10 000 CZK/plan.

As a result of implementing directives 2009/127/EC and 2009/128/EC the obligation to register equipment for applying PP products in the official registry was repealed. This led to a relaxation of the rules for the manufacture and sale of equipment for applying PP products both in the CR and in the EU, which can have a positive impact on trade with this equipment and thus also on the professional PP products´ users. However, the final impact cannot be influenced, as it will depend on the market situation and the retailers' margins. In connection with the transposition of the Directive, up to 2020, the interval for control testing of equipment for application has been extended to 5 years (instead of the current three years).

The obligations in connection with the distribution of PP products (sales records) do not increase the current burden. Thanks to the adoption of derogations pursuant to the Directive, there was a reduction in the burden on distributors offering PP products for non-professional use. The costs for capacity are summarised in the context of the impacts of capacity on producers and users of PP products. Likewise the costs for acquiring and updating professional capacity for handling PP products for entrepreneurs providing advisory services in the field of agriculture are summarised in the context of the impacts of capacity on producers and users of PP products. Institutions conducting basic and applied plant health research will be able to be entrusted with carrying out professional plant health activities; similarly as institutions providing training in the field of plant health will be able to profit from the costs for professional capacity because they will provide courses and training. The costs or benefits to the public cannot be estimated.

Request for additional expenditure may, however, arise in the course of implementing the NAP on the basis of the results of ongoing analyses and evaluating the effectiveness of the instruments, which the NAP sets out. When preparing the budget it is necessary to make an annual request for adequate financial resources to the budgetary section of the MoA, the MoE and the MoH.

No. 321/2004 Coll., on Viticulture and Wine-growing and Amending Certain Related Acts (the Viticulture and Wine-making Act), as amended.

It is assumed resources from the Rural Development Programme of the CR for 2014–2020, in the range depending on the outcome of the ongoing revision of the relevant EU legislation, will be the main source of financing to cover the costs for the transfer of expertise and information, to promote the education of agricultural entrepreneurs as conditions for obtaining a certificate of professional capacity for handling PP products and for completion of the professional advisory system in plant protection. Specifically it concerns the provisions of Articles 12 to 14 of the draft Regulation of the European Parliament and of the Council on the financing, management and monitoring of the Common Agricultural Policy No. .../2013, which lays down the obligation of MS to introduce an agricultural advisory system. It further concerns draft Regulation of the European Parliament and of the Council on support for rural development from the European Agricultural Fund for Rural Development (EAFRD) No .../2013 which assumes the provision of support for the measures referred to in Article 15 "Knowledge transfer and information actions" and in Article 16 "Advisory services, farm management and farm relief services". This concerns direct, non-refundable support and the co-financing level for the MS is 25%. Funds for financing EU subsidies are allocated within the framework of implementing the Rural Development Programme of the CR in the budgetary section of the MoA.

6. Conclusions

6.13. The National Action Plan to Ensure the Sustainable Use of Pesticides (NAP) presented here is a set of measures, in accordance with Article 4 of Directive 2009/128/EC of the European parliament and of the Council, establishing a framework for Community action to achieve a sustainable use of pesticides, which will implement the programme for reducing the adverse impact of plant protection products on human health and the environment in the territory of the Czech Republic. The NAP contains two main objectives:

- limiting the risks associated with the use of PP products in the areas of protecting human health, water protection and environmental protection, and
- optimising PP products´ use without limiting the scope of agricultural production and quality of plant products; connecting milestones and deadline measures to ensure they are met.

6.14. The NAP also sets out quantitative performance indicators for the NAP such as reduction of residues in food and water by 2020, by about 10 or 15% compared with the average of all measurements taken during the reference period 2008–2010. Another quantitative indicator is the reduction in the area of groundwater or surface water bodies that exceed environmental quality standards due to the presence of residues.

6.15. Implementation of the NAP objectives does not assume expenditures of an investment nature. The costs of a non-investment nature, in particular for acquiring, transferring and evaluating information and for transforming existing data collection systems and maintaining specialised databases are estimated at approximately CZK 33 million annually. The coordination and control of implementing the NAP will represent administrative demands on the part of all three of the participating ministries, which will require costs of approximately CZK 1.5 million annually. It is assumed that the main source of finance to cover the costs for transferring professional information and completing the professional advisory system in the protection of plants will be funds from the Rural Development Programme for the CR for the period 2014–2020.

6.16. The NAP will be implemented from 2013. Continual assessment on meeting the NAP is assumed to be twice a year and once a year an annual report on meeting the NAP will be prepared and presented at the level of the ministers of agriculture, health and the environment for information. The NAP update will be prepared on the basis of a draft submitted by the ministers of agriculture, health and the environment to the Government for approval by resolution every 5 years at the latest.

7. Glossary of terms

A biocidal product is

a) any substance or mixture in the form in which they are supplied to the user, consisting of one or more active substances or containing or producing this substance (these substances), intended to destroy, repel and render harmless any harmful organism, to prevent the action of this organism, or otherwise exerting a regulating effect on the organism in any way other than by physical or mechanical action,
b) any substance or mixture of substances or mixtures created, to which the text under subsection (a) does not apply, used with the intention to destroy, repel and render harmless any harmful organism, to prevent the action of this organism, or otherwise exerting a regulating effect on the organism in any way other than by physical or mechanical action.

Organic farming is a sustainable system of agricultural production that uses environmentally friendly ways to suppress weeds, pests and diseases, it prohibits the use of synthetic pesticides and fertilisers, it cares for the overall harmony and biological diversity of the agricultural ecosystem and favours renewable energy sources and recycling.

A Fungicide is a plant protection product intended to suppress fungal plant disease agents.

A herbicide is a plant protection product intended to suppress weed plants.

An insecticide is a plant protection product intended to suppress animal plant pests from the class of insects.

Integrated pest management (IPM) is a set of measures which, after considering all available plant protection methods, suppress the development of populations of organisms harmful to plants, support natural mechanisms of protection from organisms harmful to plants and reduce the risks to human health and the environment. The IPM is a part of integrated plant production.

Integrated plant production (IP) is the concept of sustainable agriculture, which is based on the use of natural resources when applying regulatory mechanisms that replace polluting inputs. Emphasis is placed on a comprehensive systemic approach, the central role of agri-ecosystems and on a balanced nutrient cycle. The use of agricultural-technical measures of a preventive nature and biological, chemical and physical methods are balanced with regard to environmental protection, the agricultural entrepreneurs making a profit and social requirements. Part of the IP is integrated plant management.

A pesticide is

a) a plant protection product, as defined in Regulation (EC) No. 1107/2009 of the European Parliament and of the Council;
b) a biocidal product, as defined in Directive 98/8/EC of the European Parliament and of the Council of 16 February 1998 concerning the placing of biocidal products on the market.

A plant protection product is a mixture or a solution composed of two or more substances and intended for use as plant protection products or adjuvants.

Residue is one or more substances present in or on plants or plant products, edible animal products, drinking water or elsewhere in the environment and resulting from the use of a plant protection product, including their metabolites, breakdown or reaction products.

Endangered zone is an area where an above-limit occurrence of residues of PP products and their metabolites have been found in surface, groundwater or drinking water.

Rodenticide is a plant protection product intended to suppress plant pests such as rodents.

Zoocide is a plant protection product intended to suppress animal plant pests.

8. List of abbreviations used

BRI	Bee Research Institute
CAAS	Czech Academy of Agricultural Sciences
CAFIA	Czech Agricultural and Food Inspection Authority
CEI	Czech Environmental Inspectorate
CISTA	Central Institute for Supervising and Testing in Agriculture
CHMI	Czech Hydrometeorological Institute
CR	Czech Republic
CWG	Coordination Working Group for the preparation of the National Action Plan
ECPA	European Crop Protection Association
EEA	European Environment Agency
EP	European Parliament
EPPO	European and Mediterranean Plant Protection Organisation
EQS	Environmental quality standard
EU	European Union
EUROSTAT	Statistical Office of the European Union
GAEC	Good Agricultural and Environmental Condition
ICD	The international statistical classification of diseases and related health problems
JU	University of South Bohemia
MoA	Ministry of Agriculture
MoH	Ministry of Health
MoE	Ministry of the Environment
MRL	Maximum residue level
MS	Member State of the European Union
NAP	National Action Plan to Ensure the Sustainable Use of Pesticides in the Czech Republic
NIPH	National Institute of Public Health
SISPO	Association for Integrated Systems of Fruit Cultivation
SPA	State Phytosanitary Administration
SVA	State Veterinary Administration
TIC	Toxicological Information Centre
WRBZ	Water resource buffer zone

9. Annexes

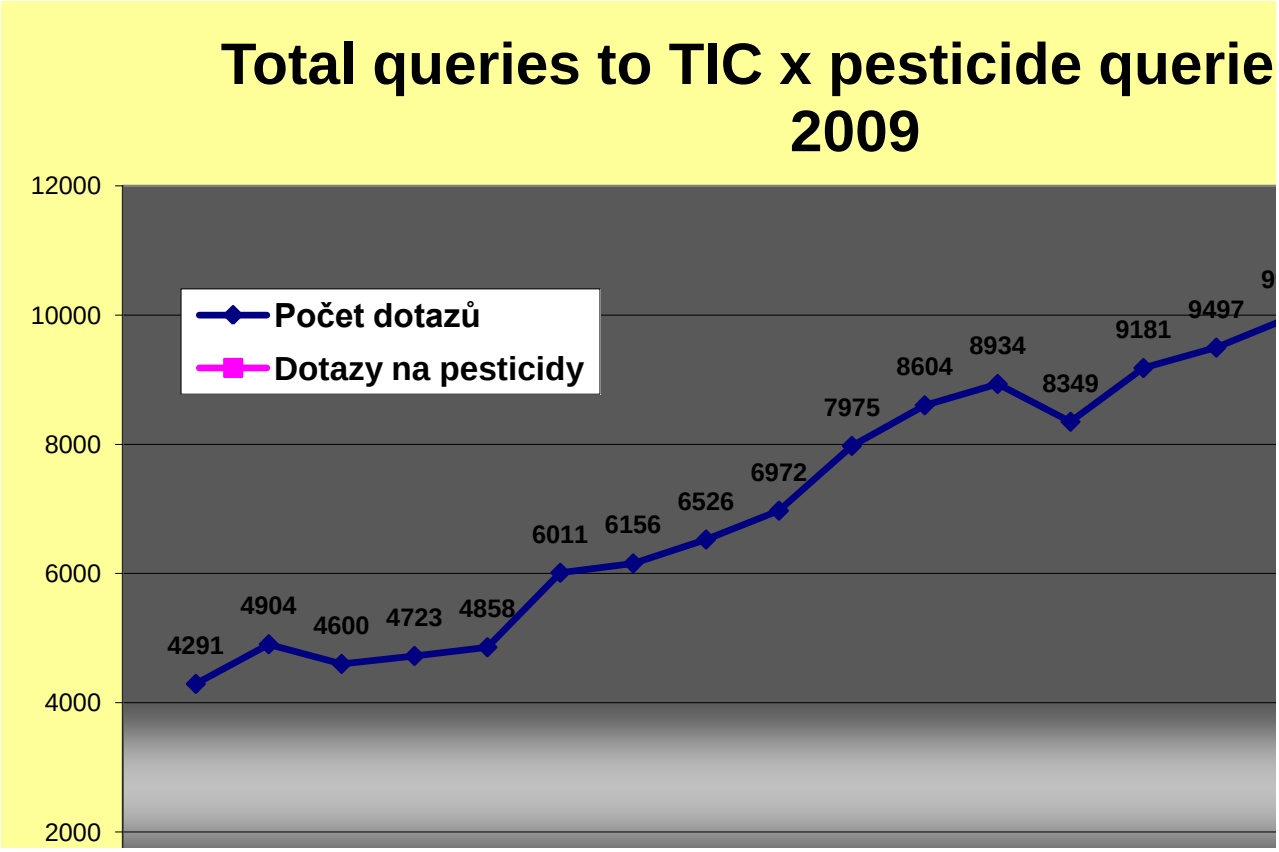
Annex No. 1

National register of hospitalised persons
No. of hospitalisations in the CR for basic diagnosis T60.0 – T60.9
Period: 1995–2011

Diagnosis	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
	No. of hospitalisations																
Organophosphate & carbamate insecticides	32	24	25	21	17	12	22	24	15	15	13	22	24	8	9	5	6
Halogenated insecticides	5	4	2	3	2	1	4	3	2	1				1	1	1	2
Other insecticides	9	16	5	18	21	8	17	17	20	8	11	6	10	11	8	13	6
Herbicides & fungicides	5	7	10	11	12	11	14	17	14	22	19	13	11	11	7	9	12
Rodenticides	6	15	5	17	10	2	5	6	9	8	10	13	9	6	2	4	4
Other pesticides	7	9	5	6	4	11	1	4	11	8	6	4	7	7	3	3	7
Pesticides NS	26	13	18	18	21	20	9	20	17	11	7	7	8	11	4	4	4
Total	**90**	**88**	**70**	**94**	**87**	**65**	**72**	**91**	**88**	**73**	**66**	**65**	**69**	**55**	**34**	**39**	**41**
	Treatment period in days																
Organophosphate & carbamate insecticides	115	90	75	50	39	29	40	64	31	27	25	43	53	15	60	12	15
Halogenated insecticides	20	18	6	3	4	1	6	4	5	1				1	1	1	8
Other insecticides	35	113	9	30	30	12	80	36	59	17	13	10	17	16	12	22	8
Herbicides & fungicides	13	43	19	28	25	20	28	27	21	59	32	18	36	17	14	22	21
Rodenticides	14	27	10	30	16	3	7	12	13	14	34	74	20	12	2	7	7
Other pesticides	36	18	13	49	5	25	3	9	22	16	9	5	8	9	3	5	11
Pesticides NS	55	30	40	67	71	33	20	51	38	29	12	13	10	27	10	6	6
Total	**288**	**339**	**172**	**257**	**190**	**123**	**184**	**203**	**189**	**163**	**125**	**163**	**144**	**97**	**102**	**75**	**76**

Annex No. 2

Overview of all queries to the Toxicological Information Centre (TIC) during the period 1991–2009 compared with queries focusing on the issue of pesticides[34]



[34] Source: Toxicological Information Centre, 2009.

Annex No. 3

No. of queries about individual pesticide groups[35] during 2005–2009, separated into children, adults and animals[36]

Year	Afflicted	Organophosphates, carbamates	Pyrethrins	Other insecticides	Rodenticides	Herbicides	Fungicides	Molluscocides	Other	Combination	Unknown	Total
2005	Child	15	27	12	93	25	4	5	1	1	3	**186**
	Adult	36	20	22	42	47	15	1	4	8	9	**204**
	Group				1							**1**
	Animal	5	1	3	15	5	1	5	1			**36**
Total 2005		**56**	**48**	**37**	**151**	**77**	**20**	**11**	**6**	**9**	**12**	**427**
2006	Child	28	30	26	61	14	11	7	12	2	6	**197**
	Adult	33	14	32	30	40	13	3	6	5	4	**180**
	Group					1						**1**
	Animal	8	3	4	9	6		5			1	**36**
Total 2006		**69**	**47**	**62**	**100**	**61**	**24**	**15**	**18**	**7**	**11**	**414**
2007	Child	38	39	23	98	19	10	8	5	1	5	**246**
	Adult	29	30	34	31	67	21	7	8	5	4	**236**
	Animal	7	3	5	25	9		14		3	1	**67**
Total 2007		**74**	**72**	**62**	**154**	**95**	**31**	**29**	**13**	**9**	**10**	**549**
2008	Child	25	17	16	65	14	5	13	2	1	3	**161**
	Adult	22	12	24	36	28	18	6	3		1	**150**
	Animal	8	2	1	10	7		11		1	1	**41**
Total 2008		**55**	**31**	**41**	**111**	**49**	**23**	**30**	**5**	**2**	**5**	**352**
2009	Child	22	29	22	45	13	5	12	1	2	6	**157**
	Adult	14	16	15	15	34	15	2	5		4	**120**
	Animal	5	2	2	5	3	1	5		1	1	**25**
Total 2009		**41**	**47**	**39**	**65**	**50**	**21**	**19**	**6**	**3**	**11**	**302**
Total 2005 - 2009		**295**	**245**	**241**	**581**	**332**	**119**	**104**	**48**	**30**	**49**	**2044**

[35] Concerns plant protection products and biocides.
[36] Source: Toxicological Information Centre, 2009.

Annex No. 4a

Comparison of amounts of residues of active substances found from plant protection products and their metabolites in agricultural products within the controls by the Czech Agricultural and Food Inspection Authority (CAFIA) in the Czech Republic 2005–2011[37]

a) Summary:

Year	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Total no. of samples assessed	819	1100	920	921	1076	1076	1101
No. of residues monitored	150	184	184	338	309	309	371
Total no. of samples with residues / (%)	301/36.8	332/30.2	326/35.4	369/40.1	753/70.0	659/61.3	638/57.9
Of which: **CR samples Total/positive**	**278/74**	**348/71**	**271/50**	**270/48**	**275/140**	**370/210**	**290/135**
CR % positive samples	**26.6**	**20.4**	**18.5**	**17.8**	**50.9**	**56.8**	**46.6**
EU samples Total/positive	421/172	586/202	482/204	425/139	535/399	540 /354	602/231
EU % positive samples	40.9	34.5	42.3	32.7	74.5	65.6	38.4
Third country samples Total/positive	120/55	148/59	145/68	158/35[38]	236/201	140/84	176/67
Third country % positive samples	45.1	39.9	46.9	22.2[38]	85.2	60	38.1
Country of origin unknown – samples Total	-	-	-	30	30	26	33
No. of samples exceeding max. residue limit (MRL)	**10**	**3**	**14**	**11**	**7**	**16**	**14**
Of which: CR samples	**2**	**0**	**6**	**0**	**1**	**3**	**4**
EU samples	4	2	2	7	4	4	7
Third country samples	4	1	6	4	2	9	3

[37] Source: Czech Agricultural and Food Inspection Authority records (http://www.szpi.gov.cz/fullTextSearch.aspx?nid=11386&searchNow=1&as_q=Zpr%C3%A1va+o+v%C3%BDsledc%C3%ADch+pl%C3%A1novan%C3%A9+kontroly+cizorod%C3%BDch+l%C3%A1tek+o+potravin%C3%A1ch).

[38] The CAFIA report does not mention the number of positive residue findings in 38 rice samples.

Annex No. 4b

b) Overview by selected commodities of plant origin:

Year / Commodity	Origin + number of samples analysed Total/with positive/above-limit residues	2005	2006	2007	2008	2009	2010	2011
Child nutrition	Total/ above-limit residues	31/ 1	87/0	63/2	59/0	252/0	58/0	39/0
Vegetables	Total/ above-limit residues	321/3	424/3	373/5	403/7	445/4	504/10	465/10
	CR Total/positive/above-limit residues	**93/18/1**	**108/19/0**	**90/14/3**	**78/24/0**	**108/65/0**	**134/88/2**	**93/56/3**
	EU Total/ above-limit residues	221/2	297/2	251/0	279/7	284/2	323/4	322/5
	Third country/Total/ above-limit residues	7/0	19/1	32/2	46/0	47/2	41/4	48/2
Fruit	Total/ above-limit residues	245/4	342/0	296/6	288/4	416/3	226/6	273/2
	CR: Total/ positive/above-limit residues	**36/16/0**	**38/15/0**	**46/21/0**	**30/1/0**	**46/32/1**	**38/38/1**	**12/1/0**
	EU: Total/ above-limit residues	141/2	190/0	154/2	146/0	191/1	119/0	165/1
	Third country: Total/ above-limit residues	68/2	96/0	68/4	112/4	179/1	69/5	96/1
Potatoes	Total/above-limit residues	27/0	29/0	27/0	41/0	34/0	49/0	50/0
Grains *(incl. rice)*	Total/ above-limit residues	-	?/0	52/0	100/0	91/0	144/0	155/0

Notes:
The number of samples is mostly calculated from the percentages given by the CAFIA.
To simplify the summary, only the samples with above-limit residues are given in the table apart from the data on vegetable commodities originating in the CR.

Annex No. 5

Overview of most commonly detected active substances of PP products in surface water with information on their area of usage and total consumption in the CR for the period 1999–2011

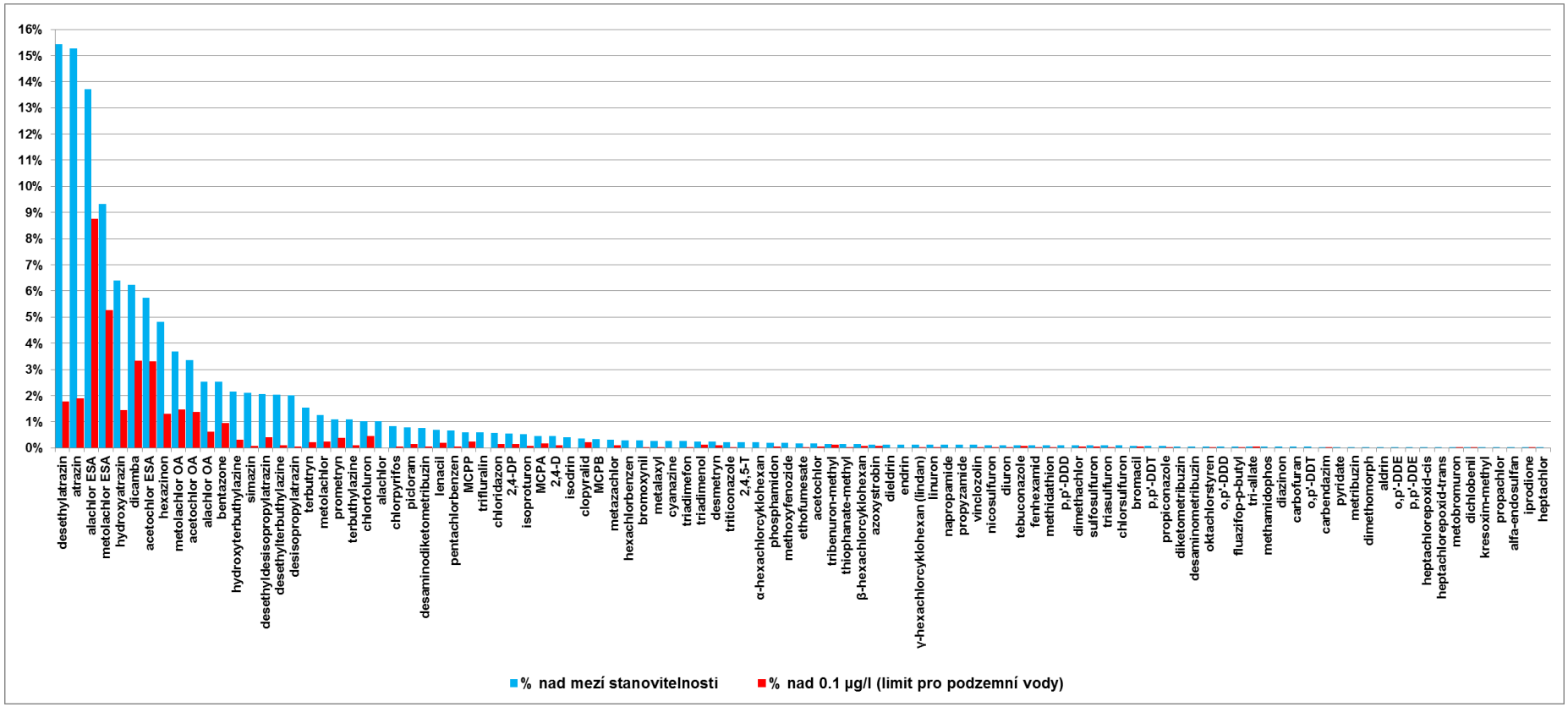
Active substance (Group) biolog. funct.)	Main area of usage (crop)	Consumption of active substances in tonnes[39]												
		1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
acetochlor (H)	maize, oil plants	170	218	233	241	276	253	284	265	280	367	292	233	209
alachlor (H)	rape	324	340	278	255	206	149	127	145	127	-	-	-	-
atrazine (H)	maize	150	137	131	145	148	114	20	36	-	-	-	-	-
bentazon (H)	grains, maize, legumes	19	15	17	16	14	16	15	14	13	65	13	22	20
Chlortorulon (H)	grains	114	117	107	72	120	102	111	98	110	147	148	132	-
2,4 D (H)	grains	29	72	89	83	90	76	93	95	77	91	63	71	75
isoproturon (H)	grains	224	178	158	130	119	115	141	129	143	216	133	156	153
MCPA (H)	grains	319	254	189	177	152	124	102	101	94	103	89	68	63
metazachlor(H)	rape	73	72	98	89	90	75	93	110	112	191	89	178	196
S-metolachlor (H)	maize	3	15	16	27	17	28	45	53	47	51	49	75	94
Terbuthylazine(H)	maize, potatoes	15	14	18	23	16	17	25	91	119	104	109	107	126
terbutryn (H)	potatoes, grains	17	14	10	9	10	2	-	-	-	-	-	-	-
thiophanate-methyl (F)	grains	2,5	2,7	20	27	25	25	37	22	22	30	25	30	33
dimethoate (I)	potatoes	-	1	0,9	1	0,6	1	0,6	0,8	4	8	6	6	6

Explanation: (H) - herbicide, (F) - fungicide, (I) – insecticide.

[39] Source: State Phytosanitary Administration records (http://eagri.cz/public/web/srs/portal/pripravky-na-or/spotreba-pripravku-na-or/spotreba-v-jednotlivych-letech/)

Annex No. 6

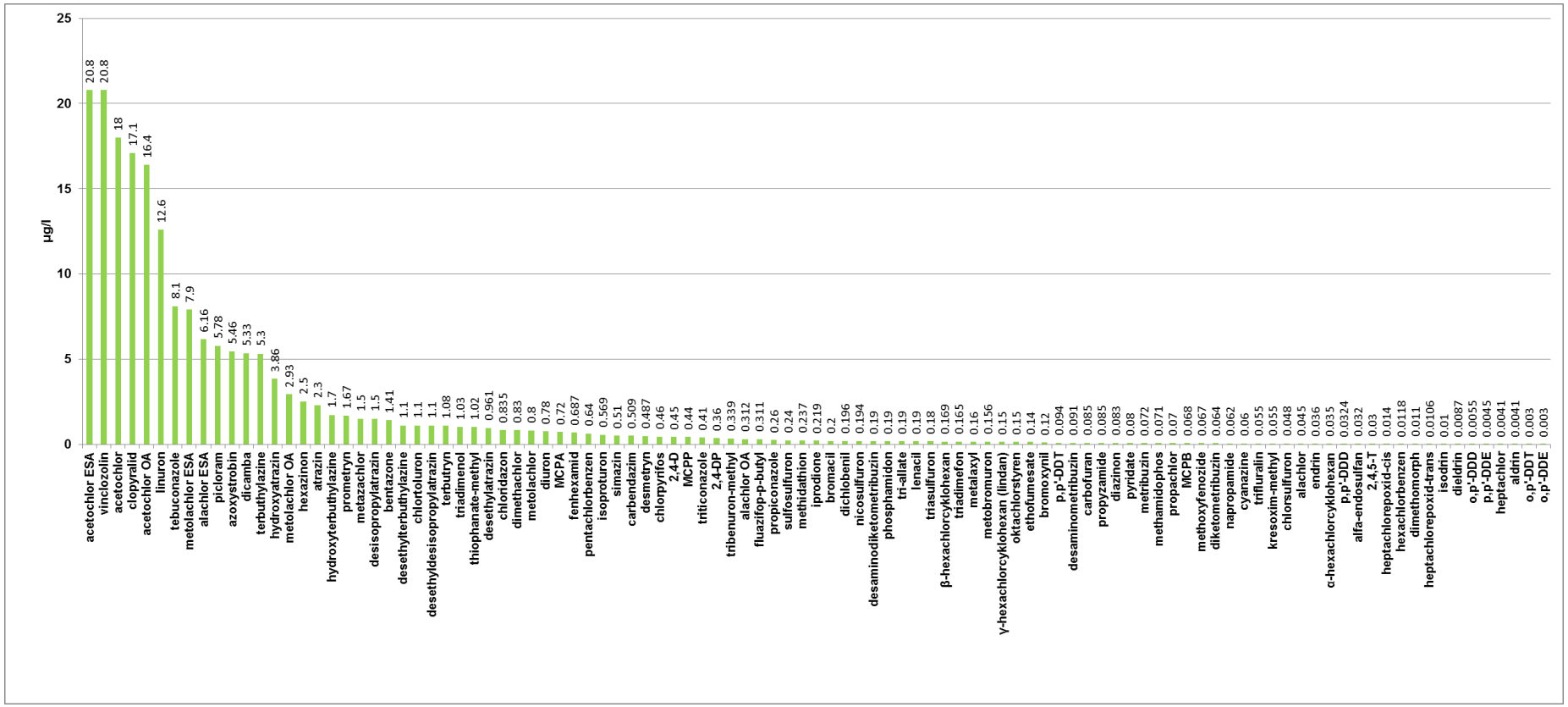
Frequency of occurrence of residues (% positive samples) of active substances and their metabolites in underground water for the period 1991–2011[40]



[40] Source: Vít Kodeš: Czech Hydrometeorological Institute, 2012.

Annex No. 7

Maximum concentrations of residues of active substances and their metabolites in underground water for the period 1991–2011[41]



[41] Source: Vít Kodeš: Czech Hydrometeorological Institute, 2012.

Annex No. 8

Overview of the number, extent of permitted usage and consumption of PP products authorised in the CR and classified as of risk for animals and birds (as of 2012)[42]

Product groups by active substances and usage	No. of permitted PP products posing a risk for terrestrial vertebrates[43]	Main extent of permitted usage in CR in 2012	Consumption of active substance in 2011 (tonnes)
Fungicides on a basis of prochloraz and a triticonazole	8	Grains, decorative plants	170
Fungicides on a basis of tebuconazole, prothioconazole, imazalilu and fluoxastrobin	3	Grains	160
Fungicides on a basis of copper oxychloride and metalaxyl-M	1	Vegetables, vines, hops	65
Fungicides on a basis of metiram	1	Potatoes, pome fruit, vines	10
Fungicides on a basis of cyprodinil	1	Barley	5
Insecticides for treating seed on a basis of beta-cyfluthrin, fipronil, imidacloprid, thiamethoxam and clothianidin	9	Sugar beet, rape, poppy, mustard, maize, sunflowers	0.4
Insecticides on a basis of pirimicarb	1	Very broad	2
Desiccant on a basis of diquat	2	Broad (field crops, permanent cultures)	29
Herbicides on a basis of 2,4-D	1	Grains, maize, seed grasses	75
Herbicides on a basis of dicamba	1	grains	13
Rodenticides on a basis of bromadiolone	1	Vineyards, orchards, field crops, forest stands, forest nurseries (common vole)	Minute amounts

[42] Source: State Phytosanitary Administration records (http://eagri.cz/public/app/eagriapp/POR/Vyhledavani.aspx).

[43] Products labelled from the standpoint of their effect on terrestrial vertebrates as hazardous, poisonous and toxic for animals (label J, NB, No, NZ, Š, ZN, Zno) or birds (label J, NB, NP, Pt1-Pt5, Š, T, VJ, VT, ZN, ZNP).
(J = poisonous, NB = hazardous, No = hazardous, NZ = hazardous for farm, domestic and wild animals, Š = harmful, ZN, Zno, ZNP = especially hazardous, VJ = very poisonous, T = toxic, VT = very toxic).
Pt1 = product is toxic to birds,
Pt2 = seed treated with product is toxic to birds.
Pt3 = product is toxic to birds, and therefore can not be used for spraying lettuce, cruciferous vegetables, and other plant species when the spray liquid accumulates on them and the birds can drink it.
Pt4 = product is toxic to birds and therefore should not be used or left in places where birds could use it as food.
PT5 = product is harmful to birds when not exceeding the prescribed dose or concentration.

Rodenticides on a basis of zinc phosphide	1	Agricultural and forest land	5
Rodenticides on a basis of polytanol	1	Meadows, pasture, fruit trees, vegetables, decorative plants, field crops	0
Repellents on the basis of ziram to protect seed from birds	1	maize	0