



Bundesamt für
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Abstract Report on the National Monitoring 2014

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Abstract Report on the National Monitoring 2014

This Abstract Report presents a short overview about the findings of the analyses of foods, cosmetic products and commodities carried out in 2014. A full version of the Report on the National Monitoring 2014 is available in German from www.bvl.bund.de/monitoring2014. Abstract Reports on the National Monitoring from previous years can be downloaded from www.bvl.bund.de/monitoring_abstracts.

1. Summary

The Monitoring Scheme is a system of repeated representative measurements and evaluations of levels of substances that are undesirable from a health point of view, such as residues of plant protection products and pesticides, heavy metals, mycotoxins and other contaminants in and on foodstuffs, commodities and cosmetic products. Further details about the monitoring programme are available from http://www.bvl.bund.de/EN/01_Food/01_tasks/02_Official-FoodControl/04_LM_Monitoring_en/LM_Monitoring_EN_node.html.

In line with the General Administrative Provision (AVV) for the 2011-2015¹ Monitoring Programme, the following foodstuffs, commodities and cosmetic products from the population's representative market basket were examined in 2014 (market basket monitoring):

1.1 Food of Animal Origin

- Eel (also smoked)
- Duck (meat)
- Trout
- Cream cheese (at least 45% fat in dry matter)
- Gouda cheese (at least 45% fat in dry matter)
- Lamb / mutton (meat)
- Beef (meat)
- Beef (liver)
- Redfish

1.2 Foods of Plant Origin

- Apricots (dried)
- Apricot juice/ apricot nectar
- Pears
- Blackberries
- Endives
- Lamb's lettuce
- Barley grains
- French beans (fresh)
- Cucumbers

¹ "Allgemeine Verwaltungsvorschrift zur Durchführung des Monitorings von Lebensmitteln, kosmetischen Mitteln und Bedarfsgegenständen für die Jahre 2011 bis 2015 (AVV Monitoring 2011-2015)", BAnz no. 198 of 29.12.2010, p. 4364ff

- Wholemeal oat flakes / oat flakes
- Hazelnuts
- Durum wheat pasta
- Currants
- Carrots
- Potatoes
- Sour and sweet cherries
- Garlic
- Pumpkin
- Turmeric (root spice, powder)
- Long-grain rice (patna rice)
- Whole-grain rice
- Lentils red (without shell)
- Lentils brown (with shell)
- Maize kernels
- Mushrooms (various kinds, dried)
- Oranges
- Wheat bran
- Mustard
- Spinach (also deep frozen)
- Wheat flour
- Lemons

1.3 Cosmetic Products

- Hair colourants

1.4 Commodities

- Toys with varnish coating
- Products with food contact (various ceramic dishes, mugs with ceramic or glass brim)

Depending on what undesirable substances were expected, the foods were analysed for residues of plant protection products and pesticides as well as for contaminants (for instance, dioxins and polychlorinated biphenyls, perfluorinated alkyl substances (PFAS), polycyclic aromatic hydrocarbons (PAH), elements, nitrate and mycotoxins).

Hair dyes were tested for nitrosamines and their microbiological status.

Toys were tested for PAH levels in the varnish coating, and daily use products with food contact for migration of elements, in particular heavy metals.

In addition to the *market basket monitoring*, the following special themes were examined in order to close information gaps in risk assessment and to address topical questions. This part of the programme is called *project monitoring*:

- Antibiotics in muscle from poultry

- Residues of plant protection products in dried berry fruits
- Pyrrolizidine alkaloids in honey
- Dioxins und PCBs in infant and follow-on formulae
- Aflatoxins and ochratoxin A in dried figs
- Polycyclic aromatic hydrocarbons in bread
- Total arsenic and inorganic arsenic in rice and in certain rice products

As far as comparison with results from earlier monitoring studies was possible, this was considered in the interpretation of findings. Yet it is emphasised that all statements and assessments in this report concerning the presence of substances that are undesirable from a health point of view solely refer to the products, substances and substance groups considered in 2014. An estimation of the entire exposure to certain substances is not possible because only part of the market basket can be examined per year and the substances occur in other products, too.

Altogether, the findings of the 2014 food monitoring programme again support the recommendation that nutrition should be manifold and balanced in order to minimise the dietary intake of undesirable substances which is, to some degree, unavoidable.

In total, 9,017 samples of products of domestic and foreign origin were analysed in the framework of market basket and project monitoring in 2014, including 7,982 samples of foodstuffs, 582 samples of consumer (daily use) products, and 453 samples of cosmetic products. The findings are presented in the following chapter.

2. Foodstuffs

2.1 Residues of Plant Protection Products and Pesticides

2.1.1 Food of Animal Origin

Residues of plant protection products and pesticides were found in 12 % of the duck meat samples, 21 % of bovine liver samples, 55 % of bovine meat samples, and 64 % of lamb and mutton meat samples. Compared to previous monitoring studies, the portions of samples with findings have clearly decreased in duck meat and bovine liver.

As in other foodstuffs of animal origin, residue findings mainly stemmed from ubiquitously present, persistent organochlorine compounds which used to be intensively applied in pesticides and plant protection products, and which now still enter the food chain via environmental contamination.

Legal residue levels were not exceeded. The residues found in the foods of animal origin examined under this monitoring programme did not indicate any risk to consumers' health.

2.1.2 Food of Plant Origin

Residues of plant protection products were found to different extent in all foodstuffs of plant origin monitored. Hazelnuts, garlic and pumpkins had quantifiable residues in less than 20 % of samples, apricot juice or nectar, barley grains, carrots, potatoes, whole-grain rice and spinach in less than 50 %.

The largest portions of samples with quantifiable residues (> 80 %) were found in pears, lamb's lettuce, currants, cherries, oranges and wheat flour. These products also had the most frequent findings of multiple residues. The worst findings of multiple residues were 22 residues in a sample of currants and 20 residues in a sample of cherries.

3.1 % of the samples of domestic products carried residues of active substances which were actually not allowed for use in that respective food crop in Germany in 2014. This concerned primarily currants, lamb's lettuce, and blackberries.

No legal residue levels were exceeded in apricot juice/nectar, endives, hazelnuts, carrots, potatoes, maize kernels, full-grain rice, and wheat flour. On the other hand, percentages of samples exceeding legal residue levels were highest in blackberries (7.9 %) and pumpkins (3.5 %). In the other 20 foodstuffs of plant origin, the portions of samples with residues exceeding the legal maximum level ranged between 0.4 % and 2.8 %.

The risk assessment of findings concluded that omethoate residues in one sample both of spinach and sweet cherries and heptachlorine residues in three samples of pumpkins had a potential acute health risk to consumers.

All other residue findings, including those exceeding legal maximum levels, did not indicate acute health risks to consumers.

One of the special monitoring projects made clear that non-compliant residue findings of plant protection products currently do not play a role in the legal evaluation of dried grapes (currants, raisins, sultanas). As long as there are no legally binding processing factors available, risk assessment of residue findings will be based on drying factors which are largely independent of the active substance considered. As a result, active substances declining during processing cannot be properly assessed according to Article 20(1) of Regulation (EU) No. 396/2005 regarding their original level in the food before processing. Dried berries carry multiple residues to a great extent. There is, however, no legal regulation regarding multiple residues of plant protection products in foodstuffs. Products of ecological farming are in the majority free of any residues of plant protection products.

2.2 Chlorate

Chlorate was not quantifiable in currants, carrots, potatoes, garlic, pumpkins, maize kernels and oranges. In blackberries, the portion of samples with quantifiable residues was rather low, being 7.7 %. It was more frequently quantifiable – that is, in every fourth to sixth sample – in pears, endives, lamb's lettuce, French beans, cucumbers, cherries, and lemons. Spinach had the greatest portion of samples with quantifiable residues, that is, 33 %. The 95th percentile was below 0.1 mg/kg in all products studied.

Chlorate will continue to be subject to monitoring in many products also in 2015 and the following years, in order to strengthen the data basis needed for a well-founded risk assessment, which in turn will provide the basis for establishing specific maximum levels.

2.3 Quaternary Ammonium Compounds (QAC)

The quaternary ammonium compounds benzalkonium chloride (BAC) and didecyl-dimethylammonium chloride (DDAC-C10) were not quantifiable in apricot juice/nectar, pears, French beans, barley grains, hazelnuts, currants, potatoes, cherries, pumpkins, whole-grain rice, spinach, and wheat flour. Bovine meat and liver, blackberries, cucumbers, carrots, garlic, turmeric, oranges, and lemons had quantifiable residues of either BAC or DDAC-C10, and Gouda hard cheese, endives and lamb's lettuce quantifiable residues of both.

Apart from four DDAC-C10 findings in lamb's lettuce, BAC and DDAC-C10 were quantifiable in only 1 to 2 samples of each other foodstuff. And apart from one sample of frozen blackberries (with a BAC level of 2.6 mg/kg), all other levels of BAC and DDAC-C10 found were below the guidance value of 0.5 mg/kg recommended by the European Commission's Standing Committee for the Food Chain and Animal Health. In most cases even, levels were far below the maximum level of 0.1 mg/kg established in October 2014 by Regulation (EU) No. 1119/2014.

In order to strengthen the data basis needed for a well-founded risk assessment and revision of current, provisional maximum residue levels, BAC and DDAC will continue to be subject to future monitoring programmes.

2.4 Dioxins and Polychlorinated Biphenyls (PCB)

Compared to monitoring studies of the year 2008, the contamination of beef with dioxins and dioxin-like PCBs was found slightly decreased in the 2014 monitoring. There was a tendency that average dioxin and dl-PCB levels were lower in beef stemming from conventional and stable husbandry than in beef from outdoor pasture husbandry. This tendency showed in the 2014 monitoring programme, as it did in earlier studies in the framework of the National Control Plan in 2011. Ten samples of beef from Germany exceeded the trigger value of dl-PCB, and half of the samples stemmed from animals fed on pastures.

Bovine liver was subject to monitoring in Germany for the first time in 2014. It showed that liver carried clearly higher levels of dioxins and dl-PCB than bovine meat, but the legal maximum level was not exceeded. Yet, the maximum level of the total of six (non-dioxin-like) indicator PCBs was exceeded in 5 bovine liver samples from Germany.

A monitoring project studying dioxins and dl-PCB in infant and follow-on formulae concluded that the maximum levels established for dioxins and dl-PCB in Regulation (EC) No. 1881/2006 could be reduced by the factor 2.5 for reasons of preventive health protection of consumers, given that here, the most sensitive consumer group is concerned. The levels measured in the monitoring project would still fall short of the so reduced maximum levels by factor 1.9.

2.5 Perfluorinated Alkyl Substances (PFAS)

PFAS are naturally omnipresent in the environment at low levels. This may also lead to a low level of background contamination in foodstuffs. Analytic findings obtained under this programme indicated that Gouda cheese, bovine meat and liver (all monitored for the first time) as well as potatoes have very low levels of PFAS. There are no established maximum levels for these substances in foodstuffs.

Samples of eel tested in 2014 showed clearly reduced levels of perfluorooctane sulfonate (PFOS), compared to findings of a monitoring project in 2010. Yet, there was one very conspicuous maximum measured – 126 µg/kg – which may indicate peaks of contamination.

Only very few of the trout samples had quantifiable levels of PFOS and perfluorooctanoic acid (PFOA). These were very near to the analytic quantification limit.

2.6 Polycyclic Aromatic Hydrocarbons (PAH)

PAH occur frequently, but to very low levels in wheat flour, so that we have to assume a given low level of background contamination. Turmeric had a markedly higher degree of contamination with PAH compared with wheat flour. As some representatives of the PAHs have mutagenic and carcinogenic properties, their presence in foodstuffs must, for reasons of preventive health protection of consumers, be as low as ever possible with good manufacturing practice and appropriate processing. Therefore, the European Commission's Expert Committee on Industrial and Environmental Contaminants currently discusses establishing maximum levels for benzo(a)pyrene and the sum of PAH4 (benzo(a)pyrene, benz(a)anthracene, benzo(b)fluoranthene and chrysene) in spices. Still, all levels of benzo(a)pyrene or PAH4 measured in turmeric are clearly below the recommended maximum levels currently discussed in the EU.

The monitoring project on PAH in bread showed that PAH may be present in bread in the lower detectable concentration range.

2.7 Mycotoxins

2.7.1 Aflatoxins B1, B2, G1 and G2

The foodstuffs wholemeal oat flakes/oat flakes, garlic, dried mushrooms, and mustard, which were all monitored for aflatoxins for the first time in the 2014 market basket monitoring, were not contaminated with these substances. Dried apricots showed only low contamination levels, with only one sample found with a quantifiable content near the current maximum level established for the sum of aflatoxins.

Turmeric, which was analysed for aflatoxins for the first time, showed low average levels of aflatoxin B1 and of the sum of aflatoxins B and G. No sample exceeded the established maximum level.

Compared to the last study in 2004, ground or otherwise chopped hazelnuts had higher average and 90th percentile values of the levels measured of both single aflatoxins and the sum parameter. In addition, four samples of the 2014 study exceeded the legal maximum level.

Lentils (brown, with shells) were not contaminated with aflatoxins in 2014. This was the same finding as in the 2001 monitoring programme.

Long-grain rice (milled) and whole-grain rice carried only very low aflatoxin levels, which backed the findings of the previous 2008 monitoring.

Examination of dried figs in the framework of a monitoring project produced a higher percentage of samples with quantifiable aflatoxin concentrations than earlier studies, but these were still far below the legal maximum levels in most cases. Contamination of dried figs with aflatoxins is regarded as low, and routine checks in the framework of official food controls should be sufficient.

2.7.2 Ochratoxin A (OTA)

Dried apricots, garlic, dried mushrooms, and mustard, which were monitored for the first time in 2014, showed low contamination levels. Turmeric had the highest median level of OTA among the foods examined for OTA in 2014, but the legal maximum level was not exceeded.

Food bran made from wheat has also not been examined for OTA before. But compared to wheat grains, which were last examined in 2012, the average concentration currently measured in wheat bran is on a quite higher level. One sample from Germany exceeded the legal maximum level of OTA.

Long-grain and whole-grain rice samples carried only very low levels of OTA, which is similar to the findings of the 2003 monitoring.

Ground or otherwise chopped hazelnuts were last analysed for OTA under the 2004 monitoring programme. Average levels measured in 2014 were markedly higher than in previous studies. There is no legal maximum level for OTA in hazelnuts.

The results of the monitoring project dealing with mycotoxins in dried figs showed that, as with aflatoxins, OTA was quantifiable in many more samples in 2014 than it was in previous monitoring studies. Yet the levels were mostly far below the legal maximum level, meaning that contamination of dried figs with OTA is low, and routine checks in the framework of official food controls should be sufficient.

2.7.3 T-2 toxin, HT-2 toxin

Formation of T-2 and HT-2 toxin is fluctuating, strongly depending on weather conditions. The toxin-forming fungi of the *Fusarium spp.* preferably attack oats among all cereal species.

Compared to oat grains, which were examined in the 2012 monitoring programme, the median value of concentrations of total T-2 and HT-2 toxin measured in oat flakes/wholemeal oat flakes under the 2014 programme was quite higher. Yet no sample exceeded the respective European Indicative level.

The question whether T-2 and HT-2 levels in oat flakes also depend on the technological processing, apart from the weather, should be subject to a monitoring project in future.

2.7.4 Deoxynivalenol (DON)

Compared to earlier studies of DON in wheat grains, levels measured in wheat food bran examined under the 2014 monitoring were clearly higher in the median value. In addition, three samples exceeded the legal maximum level.

2.8 Elements

As regards lead, cadmium, mercury, and arsenic, which count among the toxic environmental contaminants, we have data already from earlier monitoring programmes for the majority of foodstuffs examined for elements in the framework of the 2014 programme. A comparison of findings from the 2014 monitoring with those from earlier programmes shows that levels of lead, cadmium, and mercury have declined in the majority of foodstuffs sampled, and in particular in the fish studied – eel, redfish and trout. Arsenic, in contrast, does not allow stating a definite trend in contamination levels. The findings on copper have essentially backed findings of earlier programmes. Aluminium, nickel and chromium, on the other side, were targeted in most foods in the 2014 market basket monitoring for the first time. Therefore, we do not have findings for comparison with earlier studies for these elements.

The following paragraphs present the findings of the 2014 market basket monitoring and extra monitoring projects with regard to the single elements.

2.8.1 Lead

Foodstuff samples of animal origin examined in 2014 contained low levels of lead, as a whole. Bovine liver showed a higher degree of contamination compared to the other foods of animal origin, which is attributable to the fact that liver, as the de-contaminating organ in the animal system, accumulates heavy metals taken in with the feed. So, higher lead levels have to be expected in this kind of food. Yet, the maximum level established by Regulation (EC) No. 1881/2006 for bovine liver was not exceeded in any of the samples examined.

Lead levels in the samples of vegetal food examined were also low in most cases. Oat flakes and the tested pulses (red lentils without shells and brown lentils with shells), about which we have also findings from earlier monitoring programmes, in fact showed a decline in lead contents. The contents measured in egg-free durum wheat pasta, garlic and mustard – all examined for the first time – were also low. A higher degree of contamination was seen in turmeric, on the other hand. Turmeric was also examined for lead for the first time in the framework of the monitoring in 2014. Because of the low amount of consumption of this spice, and therefore low degree of exposure, turmeric does not bring a health risk to consumers. Still, one should try and see together with spice manufacturers whether it is possible to reduce the lead concentrations in spices by special minimisation measures in the framework of good manufacturing practice.

2.8.2 Cadmium

The foodstuffs of animal origin tested in 2014 (eel, trout, redfish, duck meat, lamb/mutton, and cream and Gouda cheese) showed very low levels of cadmium. Bovine liver showed a higher degree of contamination compared to the other foods of animal origin, which is attributable to the fact that liver, as the de-contaminating organ in the animal system, accumulates heavy metals taken in with the feed. Still, none of the tested bovine liver samples exceeded the maximum level established by Regulation (EC) No. 1881/2006 for cadmium in bovine liver.

As regards the vegetal foodstuffs, cadmium levels ranged very low in oat flakes, potatoes, long-grain and whole-grain rice, and lentils, as well as in durum wheat pasta, garlic, turmeric and mustard – the latter four having been subject to cadmium monitoring for the first time. The findings in rice and lentils were about at the same level as in previous monitoring studies. Potatoes and oat flakes even showed declining levels. One sample of potatoes exceeded the maximum level established by Regulation (EC) No. 1881/2006, but the median concentrations in this food were inconspicuous. So, cadmium levels were not generally higher than before, but there was some punctually enhanced contamination. A comparatively higher cadmium level (compared to the other vegetal foods) was made out in wheat food bran. This is owing to the fact that the outer layers of the cereal grain, which are used for bran, accumulate contaminants such as the heavy metal cadmium, to a higher degree. The maximum level fixed in Regulation 1881/2006 was not exceeded, however.

2.8.3 Mercury

Lamb and mutton, bovine liver and trout had very low contamination levels, like in previous years. Contamination of duck meat, fish and Gouda cheese was also very low. These foods were monitored for mercury for the first time in the framework of the 2014 market basket monitoring. The maximum level for mercury of 0.01 mg/kg fixed in Regulation (EC) No. 1881/2006 was exceeded in five samples of duck meat and in one sample of lamb. As the median concentrations in these foods were inconspicuous, mercury levels were not generally enhanced, but there was rather some punctually enhanced contamination. Eel and redfish showed the highest mercury concentration among all foodstuffs examined. It is understood that both predator fish accumulate organically bound mercury to a particular degree. Therefore, one has to expect higher concentrations of mercury in foodstuffs made from these two fish. The legal maximum level for mercury in this fish was not exceeded.

2.8.4 Copper

Copper levels in most of the tested foods of animal origin were low, their medians ranging from 0.289 to 0.992 mg/kg. The foodstuffs of vegetal origin had medians between 0.772 and 12.0 mg/kg, and thus were inconspicuous.

Bovine liver carried very high levels of copper, as it did in previous years. The maximum levels laid down in Regulation (EC) No. 396/2005 were exceeded in 80 samples (68 %) of bovine liver, 19 samples (14 %) of duck meat, two samples (2 %) of long-grain rice, and in one sample each of potatoes, oat flakes, whole-grain rice and wheat food bran. The copper findings in bovine liver and duck meat should give reason to try to identify the sources of contamination, such as, residues of plant protection products, environmental contamination, or copper-containing feed additives. Feed and food legislation is insufficiently harmonised in this respect, and the European Commission is currently discussing a revision of legal maximum levels of copper in order to establish legal regulations that meet the needs of the evaluation practice.

2.8.5 Aluminium

For most of the foodstuffs analysed for aluminium in 2014, there are no monitoring data from previous programmes for comparison.

The majority of tested foodstuffs of animal origin showed low aluminium median levels of less than 1 mg/kg.

The majority of vegetal foodstuffs tested had median levels ranging from 0.436 mg/kg (in oat flakes) to 3.3 mg/kg (mustard). Brown lentils (with shells) contained relatively high amounts of aluminium because of stronger accumulation of aluminium from the soil. A possible source might also be use of aluminium-containing plant protection products.

Another point to note are high aluminium contents in turmeric. The median value here was 339 mg/kg, and the maximum concentration found was 658 mg/kg. The high levels in this spice might be attributable to use of aluminium-containing grinding materials, or enhanced accumulation from the soil in turmeric growing areas. However, low consumption amounts of this spice and thus low exposure of consumers allow assuming that there is no health risk to consumers. Yet the findings should be reason to continue to monitor aluminium levels in turmeric in future programmes.

2.8.6 Arsenic

Regarding foodstuffs of animal origin monitored in 2014, low concentrations of arsenic were found in duck meat, lamb/mutton, cream and Gouda cheese, and in bovine liver. Markedly higher amounts were found in fish, here in trout and in particular in eel and redfish. Fish, in particular predatory fish such as redfish and eel, accumulate various substances, including heavy metals and other elements, from their natural environment to a higher degree. That is why they frequently carry higher levels of arsenic. Arsenic is present in fish, however, mostly in the form of less toxic organic compounds.

As regards vegetal foodstuffs, arsenic contents were mostly low. Higher contents were only found in long-grain and full-grain rice. These levels were in about the same range as in previous years. With inorganic arsenic compounds being much more toxic than organic ones, and rice accumulating inorganic arsenic to a higher degree than other plants because of its particular growing methods and physiological properties, the 2014 monitoring of rice did not only focus on total arsenic contents, but in particular on the proportion of inorganic arsenic. The measurements showed that none of rice samples exceeded the maximum levels of inorganic arsenic pursuant to Regulation (EU) No. 2015/1006 that will be valid from January 2016 on.

The data on total arsenic and inorganic arsenic compounds in rice and certain rice products obtained under an extra monitoring project showed that the levels of inorganic arsenic in rice waffles and rice flakes intended for use in infant food were lower than the levels used by the Federal Institute of Risk Assessment (BfR) in their assessment of consumer exposure through inorganic arsenic in rice and rice products (BfR 2015).

2.8.7 Nickel

For most of the foodstuffs monitored for nickel in 2014, there are no or not sufficient findings from earlier monitoring programmes to make comparisons. The median concentration values of nickel were at a low level in most of the vegetal foodstuffs studied in 2014. Only lentils and oat flakes showed relatively enhanced nickel concentrations. These are attributed to the fact that cereals and legumes accumulate nickel from the soil to a higher degree.

2.8.8 Chromium

The median values of chromium concentrations in most of the foodstuffs monitored for chromium for the first time in 2014 were on a low level. An enhanced chromium level was found in turmeric. This should be reason to continue to monitor this spice. Also, closer investigations should be made to establish the sources of contamination.

2.9 Nitrate

Lamb's lettuce had the highest nitrate levels among all foodstuffs examined in the framework of the 2014 monitoring programme. Nitrate contamination in lamb's lettuce also did not decline, compared to findings of earlier programmes. As this product continues containing relatively high amounts, the recommendation to install suitable measures to reduce nitrate contamination in this food is kept up.

Compared to that, nitrate findings in endives and spinach were on a lower level, but still showed some punctual peaks. A comparison with findings in spinach under earlier monitoring programmes shows that contamination levels have declined. The maximum level established for nitrate in spinach by Regulation (EC) No. 1881/2006 was exceeded only in one spinach sample in the 2014 monitoring.

2.10 Perchlorate

Perchlorate was quantifiable in nearly all foodstuffs monitored in 2014. Quantifiable amounts occurred most frequently in the leafy vegetables spinach, lamb's lettuce and endives, and in cucumbers and citrus fruit (lemons and oranges). In lamb's lettuce, endives and cucumbers, perchlorate levels were comparatively higher, though still lower than levels measured in lamb's lettuce and cucumbers in the course of official food controls actions in 2013. Spinach carried the highest levels found, and there was no decline compared to levels found in the course of official food controls in 2014. Pears, French beans, carrots, potatoes, pumpkins, cherries, berries, and maize had very low levels of chlorate.

The legal evaluation of the perchlorate levels found in this monitoring programme was based on reference values agreed by the European Commission at a meeting of the Standing Committee on the Food Chain and Animal Health on 16 July 2013 that were in effect during the time of the programme. The reference value for spinach, 0.2 mg/kg, was exceeded in two out of a total of 42 spinach samples. All other foodstuff samples did not exceed reference values.

2.11 Pharmacologically Active Substances

Tests for residues of pharmacologically active substances in the framework of a monitoring project showed that findings higher than legal maximum levels in poultry meat are an exception. Residues of antibiotics below the legal maximum levels could be found at retail level in ca. 5 % of chicken samples and in nearly 30 % of turkey samples. The tests should be repeated at appropriate intervals under the monitoring programme.

2.12 Pyrrolizidine alkaloids

One monitoring project tested 151 kinds of honey for a range of 16 pyrrolizidine alkaloids (PA). 82 % of the honeys contained PA to less than 10 µg/kg. 15 % of the samples contained PA between 11 and 50 µg/kg, and 3 % of samples contained more than 50 µg PA per kg honey. The findings showed a trend that European honeys carried lower levels of PA than honeys from the Americas. The highest total PA level found in American honey was 217 µg/kg in a honey from Uruguay. German honeys contained PA up to a maximum of 30 µg/kg.

When comparing the present findings with those from earlier studies, we note a welcome development in PA contamination levels in honey. This may be attributable to a factual regulation through product specifications imposed by big retailers on their honey suppliers.

There are no tolerance or limit values for PA in honey yet.

To the end of precautionary health protection of consumers and minimisation of PA in the food chain, measures should be taken right at the start of honey production. PA entry in honey could be minimised by advising beekeepers to this end and choosing proper places for bee colonies. In addition, owners of meadows and pastures should ensure an appropriate control of PA-producing plants (e.g. ragwort) on their land.

3. Cosmetic Products

3.1 Nitrosamines in Hair Colorants

The contamination of oxidative and direct hair dyes with N-nitrosodiethanolamine (NDELA) is at a low level. Quantifiable levels of the nitrosamine NDELA were detected only in 12 out of 286 samples.

Pursuant to Article 14(1)(a) of the Regulation (EC) No 1223/2009 on cosmetic products, cosmetic products must not contain nitrosamines. Traces of nitrosamines are only tolerable if they are technically unavoidable with good manufacturing practice, and if the cosmetic product is still safe. In this context, Article 14(1)(b) in conjunction with Annex III of the Regulation provides for substances also to be used in hair colourants a maximum level of nitrosamine of 0.05 mg/kg. In the two non-compliant samples of direct hair dyes, this level was exceeded by up to seven times. Among the overall result of the testing, however, these two non-compliant findings are exceptions.

3.2 Microbial status of plant-based hair colorants

Tests of the microbial status of plant-based hair dyes revealed high total counts in a large percentage of samples. This indicates a lack of hygienic conditions at manufacturing plants and/or microbiological contamination of raw materials. High germ counts in such products are not uncommon, because these products normally contain natural herbal ingredients. However, the tests did not detect potentially pathogenic germs. Preparation of hair dyes using hot water according to manufacturer's instructions led to reduction of total bacteria count.

4. Commodities/Daily Use Articles

4.1 Polycyclic Aromatic Hydrocarbons (PAH) in Toys

The contamination of the varnish coating of toys with polycyclic aromatic hydrocarbons is low, if assessed on the basis of concentration limits, which will be valid in future. Only six out of 219 tested samples contained PAH in concentrations higher than the levels that will be in effect from 27 December 2015 on. Very conspicuous concentrations, such as the maximums of 66.9 mg/kg naphthalene or 4.4 mg/kg phenanthrene and pyrene stemmed from PAH of comparably low toxicity.

Regulation (EC) No 1907/2006 (REACH Regulation) does not consider an exposure pathway of PAH via tooth scraping. Consequently, an assessment of PAH concentrations in swallowable parts could improve interpretation of results.

4.2 Release of Elements from Food Contact Material

The legal maximum levels of lead and cadmium together were exceeded in 12 out of 525 (2.3 %) measurements in products with food contact. Definitely quantifiable amounts of released cobalt were measured in all three product categories examined. However, at present there are no limit or guidance values for release of cobalt or other elements from ceramic dishes.

With regard to the existing limit values for release of elements from ceramics, the measured levels were low.